



• MIDI TIME PIECE II

User's Guide for the Apple
Macintosh Computer



Mark of the Unicorn

This equipment has been type tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by any combination of the following measures:

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- Increase the separation between the equipment and the receiver
- Plug the equipment into an outlet on a circuit different from that to which the receiver is connected.

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Macintosh Computer

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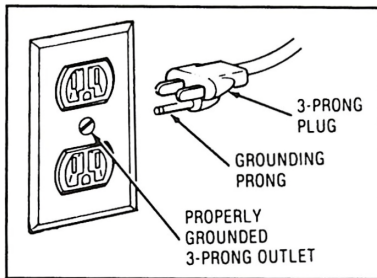
SAFETY PRECAUTIONS AND ELECTRICAL REQUIREMENTS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR OTHER MOISTURE.

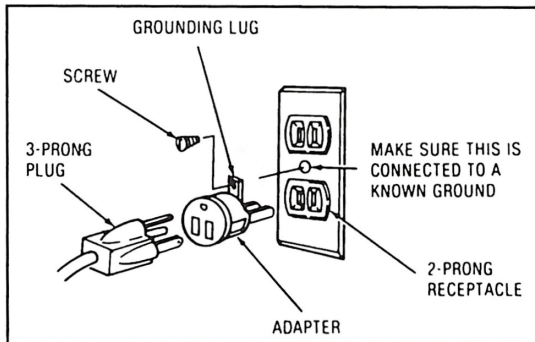
WARNING: DO NOT PERMIT FINGERS TO TOUCH THE TERMINALS OF PLUGS WHEN INSTALLING OR REMOVING THE PLUG TO OR FROM THE OUTLET.

WARNING: IF NOT PROPERLY GROUNDED THE MTP II COULD CAUSE AN ELECTRICAL SHOCK.

The MTP II is equipped with a three-conductor cord and grounding type plug which has a grounding prong, approved by Underwriters' Laboratories and the Canadian Standards Association. This plug requires a mating three-conductor grounded type outlet as shown.



If the outlet you are planning to use for the MTP II is of the two prong type, DO NOT REMOVE OR ALTER THE GROUNDING PRONG IN ANY MANNER. Use an adapter as shown below and always connect the grounding lug to a known ground. It is recommended that you have a qualified electrician replace the TWO prong outlet with a properly grounded THREE prong outlet. An adapter as illustrated is available for connecting plugs to two-prong receptacles.



WARNING: THE GREEN GROUNDING LUG EXTENDING FROM THE ADAPTER MUST BE CONNECTED TO A PERMANENT GROUND SUCH AS TO A PROPERLY GROUNDED OUTLET BOX. NOT ALL OUTLET BOXES ARE PROPERLY GROUNDED.

If you are not sure that your outlet box is properly grounded, have it checked by a qualified electrician. NOTE: The adapter illustrated is for use only if you already have a properly grounded two-prong receptacle. Adapter is not allowed in Canada by the Canadian Electrical Code. Use only three wire extension cords which have three-prong grounding type plugs and three-prong receptacles which will accept the MTP II plug.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

IMPORTANT SAFEGUARDS

1. Read Instructions - All the safety and operating instructions should be read before operating the MTP II.
2. Retain Instructions - The safety instructions and owner's manual should be retained for future reference.
3. Heed Warnings - All warnings on the MTP II and in the owner's manual should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the MTP II from the wall outlet before cleaning and use a damp cloth. Do not use liquid or aerosol cleaners.
6. Overloading - Do not overload wall outlets and extension cords as this can result in a risk of fire or electrical shock.
7. Power Sources - This MTP II should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your location, consult your local power company.
8. Power-Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the MTP II.
9. Lightning - For added protection for the MTP II during a lightning storm, unplug it from the wall outlet. This will prevent damage to the MTP II due to lightning and power line surges.
10. Servicing - Do not attempt to service this MTP II yourself as opening or removing covers will expose you to dangerous voltage and other hazards. Refer all servicing to qualified service personnel.
11. Damage Requiring Service - Unplug the MTP II from the wall outlet and refer servicing to qualified service personnel under the following conditions.
 - a. When the power supply cord or plug is damaged.
 - b. If liquid has been spilled or objects have fallen into the MTP II.
 - c. If the MTP II has been exposed to rain or water.
 - d. If the MTP II does not operate normally by following the operating instructions in the owner's manual.
 - e. If the MTP II has been dropped or the cabinet has been damaged.
 - f. When the MTP II exhibits a distinct change in performance, this indicates a need for service.
12. Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
13. Safety Check - Upon completion of any service or repairs to this MTP II, ask the service technician to perform safety checks to determine that the video product is in safe operating conditions.

AVOID THE HAZARDS OF ELECTRICAL SHOCK AND FIRE

Do not handle the power cord with wet hands. Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug.

INPUT

Line Voltage: 100 - 120 volts AC, RMS (US and Japan) or 220 - 250 volts AC, RMS (Europe)

Frequency: 47 - 63 Hz single phase

Power: 7 watts maximum

ENVIRONMENT

Operating Temperature: 10°C to 40°C (50°F to 104°F)

CAUTION: DANGER OF EXPLOSION IF BATTERY IS REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY MANUFACTURER. DISPOSE OF USED BATTERY ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

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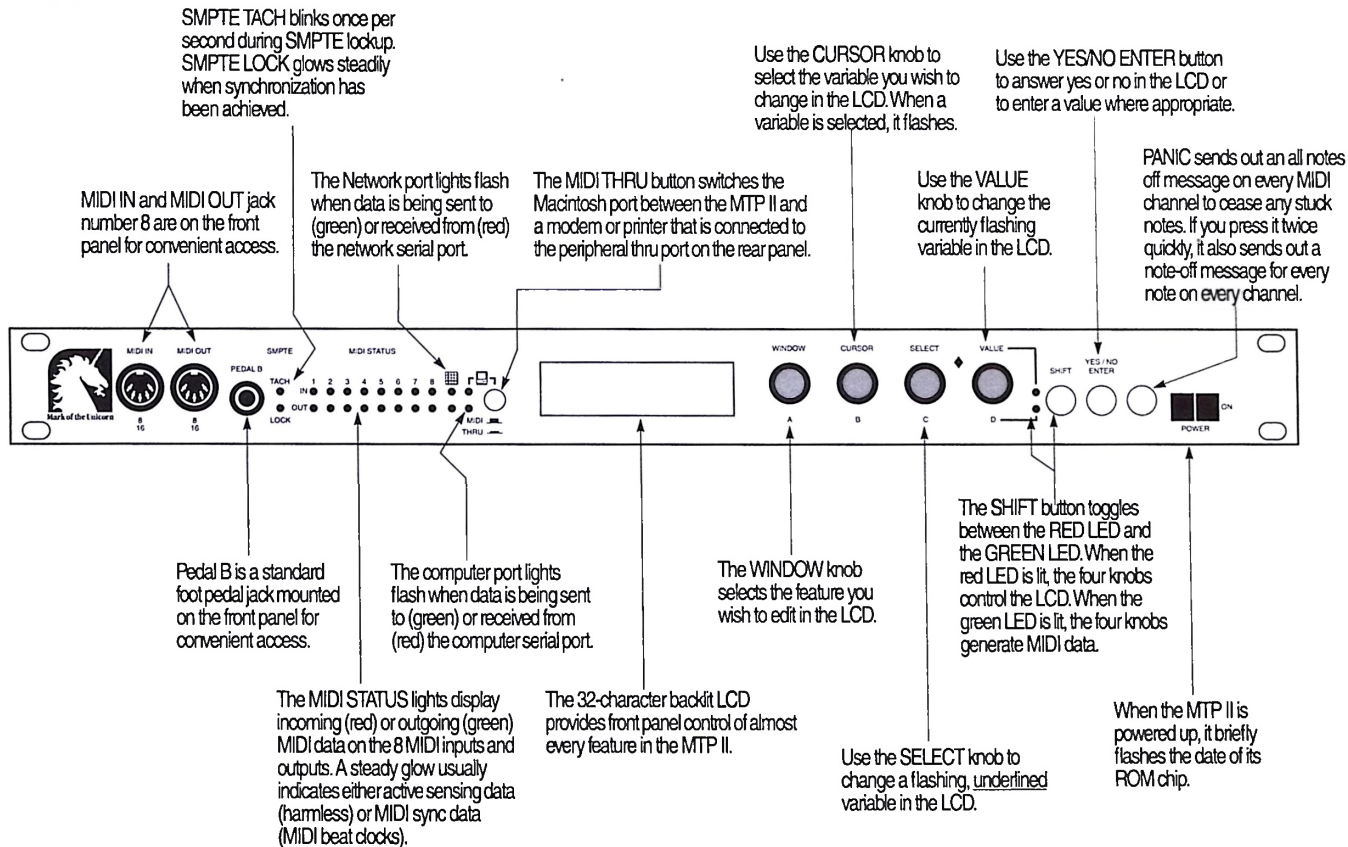
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Front Panel Quick Reference

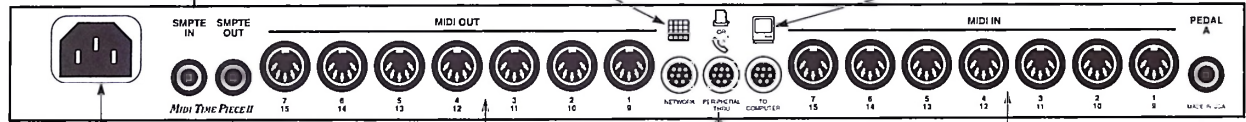


Rear Panel Quick Reference

SMPTE IN is a 1/4" phone jack that receives longitudinal time code (LTC) at either -10 dB or +4 dB.

The NETWORK port is a serial port that connects the MIDI Time Piece II to another MIDI Time Piece with a mini-DIN 8 cable. This cable can be up to 1000 feet long. You can also connect a third party Macintosh MIDI interface to this port to provide another MIDI IN and OUT.

The COMPUTER serial port is a mini-DIN 8 jack that connects the MTP to the computer. This cable should be no longer than 30 feet.



Power cable connector (100-120volts for US & Japan) (220-250 volts for Europe)
CAUTION: only plug in a power source that matches the label shown beneath the connector.

These are seven of the MTP II's eight MIDI OUT jacks. The eighth is on the front panel. Each cable has its own set of sixteen MIDI channels. Each cable has a number, which depends on whether the MTP is acting as a single unit (cables 1-8), or as the first or second MTP in a two-MTP network (cables 1-8 or 9-16, respectively).

These are seven of the MTP II's eight MIDI IN jacks. The eighth is on the front panel. Each cable has its own set of sixteen MIDI channels. Each cable has a number, which depends on whether the MTP is acting as a single unit (cables 1-8), or as the first or second MTP in a two-MTP network (cables 1-8 or 9-16, respectively).

SMPTE OUT is a 1/4" unbalanced phone jack that emits longitudinal time code (LTC) at either -10 dB or +4 dB.

The PERIPHERAL THRU serial port connects to a modem or printer with a mini-DIN 8 cable. When the THRU switch on the front panel is depressed, a modem or printer connected to this port can communicate directly with the computer.

Pedal A is a standard foot pedal jack. Unlike PEDAL B on the front panel, PEDAL A can also receive an audio click, which the MTP II can convert into MIDI data.

Chapter 1 *Installation and Setup*

Mail in the registration card

Packing list

This chapter explains how to install and set up the MIDI Time Piece II (MTP II).

Please complete and mail in the registration card found at the beginning of this manual; doing so entitles you to the conditions of the limited warranty, updates, technical support, and upgrade information. Since Mark of the Unicorn cannot provide customer support to non-registered users, please be sure to send the card in immediately after purchase.

The MIDI Time Piece II is shipped with the items listed below. If any of these items are not present in your MIDI Time Piece box when you first open it, please immediately contact your dealer or Mark of the Unicorn.

- One MIDI Time Piece II
- One power cord
- Two Macintosh System-Peripheral ("mini-DIN 8") cables (12 feet long)
- One Macintosh floppy disk containing the MIDI Time II software
- One MIDI Time Piece Manual with Registration Card and Limited Warranty

Installing the MTP II

Connecting the MTP to the Mac

Installing the MIDI Time Piece (MTP) is easy. Follow the steps in this section to get your MIDI Time Piece up and running.

1. **Plug the power cord into the MTP II and then plug the other end into a power outlet.**

We recommend that you leave the MIDI Time Piece switched off until you finish installing it.

2. **Connect one of the DIN-8 cables (that are provided with the MIDI Time Piece) from the modem or printer port on the Macintosh to the Mac Serial port on the rear panel of the MIDI Time Piece as shown in Figure 1-1.**

If your computer has the old, rectangular DB-9 jack instead of the circular DIN-8 cable jack, you will need to obtain a DIN-8 to DB-9 cable from your Macintosh dealer.

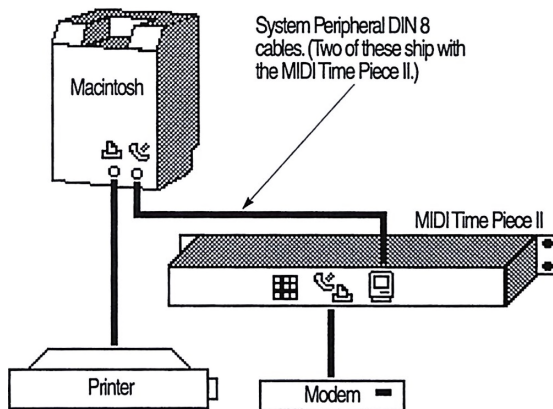
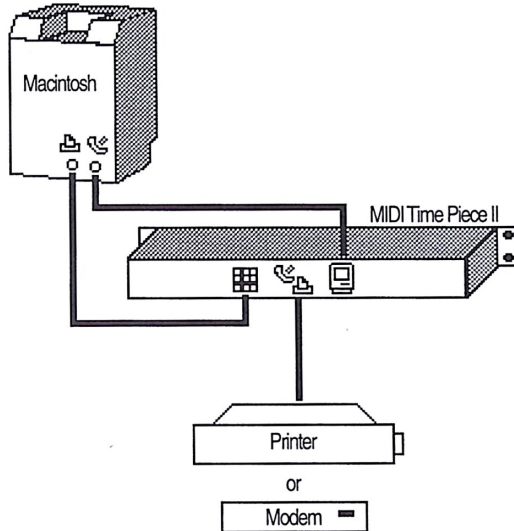
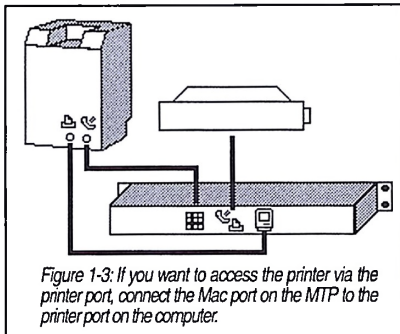


Figure 1-1: Connect the MIDI Time Piece II computer port to the Macintosh modem port. This connection is all you need when using Performer, Cubase (version 1.8 or later), or Vision (1.3 or later), which can access 128 MIDI channels via this single connection.

- Note: if you have an old, regular MIDI interface, you can connect it to the network port to get an additional 16 MIDI channels. See "Connecting a regular MIDI interface" on page 29.

3. If you have a sequencer that does not support the MTP's 128 channels, connect a second DIN-8 cable (provided with the MIDI Time Piece) from the other available serial port on the Macintosh to the Network serial port on the rear panel of the MIDI Time Piece as shown in Figure 1-2.

This connection provides an additional 16 MIDI channels for a total of 32 MIDI channels.



Connecting 2, 3, or 4 MTP's in a network

Using a modem or printer

If you are networking two or more MIDI Time Pieces, proceed with this installation to install the first one, and then see chapter 2, "Installing a Network" for information about how to install the rest of the network.

If you need to connect a modem or printer, connect them as shown in Figure 1-1, Figure 1-2, or Figure 1-3, depending on the setup you require. Use one of the mini-DIN 8 cables that ships with the MTP to do so, or use a standard Macintosh System Peripheral 8 cable, which you can obtain from your Macintosh dealer.

Connecting MIDI gear

4. Connect each MIDI device's MIDI IN jack to one of the 8 MIDI OUT jacks on the MIDI Time Piece as shown by Connection A in Figure 1-4 below. Conversely, connect the MIDI OUT jack on the MIDI device to one of the 8 MIDI IN jacks on the MIDI Time Piece as shown by Connection B.

MIDI devices that do not receive MIDI data, such as a dedicated keyboard controller, guitar controller, or drum pad, do not need Connection A shown below in Figure 1-4. Similarly, devices that never send data, such as a sound module, do not need Connection B. However, if you plan to use editor/librarian software with the sound module, or if you need to get system exclusive bulk dumps from it, make both connections. In general, make both connections for any device that needs to both send and receive MIDI data.

Note: even though the MIDI Time Piece does not require that you use the same numbered MIDI IN and MIDI OUT for each device, you may want to do so to help keep things clear.

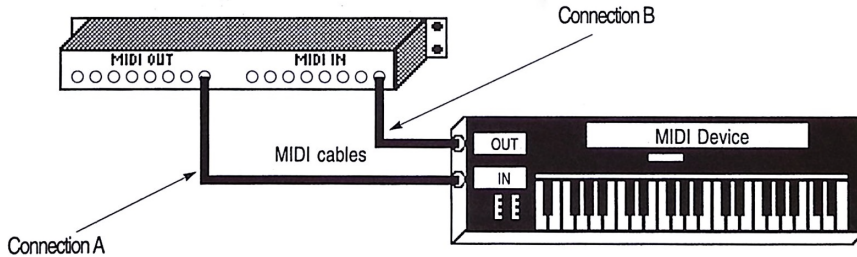


Figure 1-4: Connecting a MIDI device to the MIDI Time Piece. If you are connecting a sound module or other device that does not need to transmit MIDI data, you do not need to make connection B shown above. Conversely, if the device is a MIDI controller such as a drum pad or guitar controller, you do not need to make Connection A.

MIDI connections worksheet

Here's a suggestion. If you have more than a few pieces of gear connected to the MTP II, jot down which device is connected to each input and output in the worksheet below. Later on, you'll enter this information into the MTP II Console software, which will allow you to refer to your MIDI devices by name (rather than cable number) in the software.

MIDI Cable Connections Worksheet

MIDI IN

MIDI OUT

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

Note: use cables 9 through 16 below if you have two MTP's networked together.

9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

Connecting audio cables for SMPTE

5. If you will be synchronizing the computer to an external time source such as an audio tape recorder (ATR), make the audio connections shown in Figure 1-5.

Normally, time code is recorded on an outside track of an ATR. Take the audio out from this track and connect it to the SMPTE IN on the MTP. If you need to record ("stripe") SMPTE time code on a track, connect the SMPTE OUT from the MTP directly to the input for this track. Do not pass this connection through a mixer or any type of signal processing equipment. Use shielded 1/4 inch audio cables.

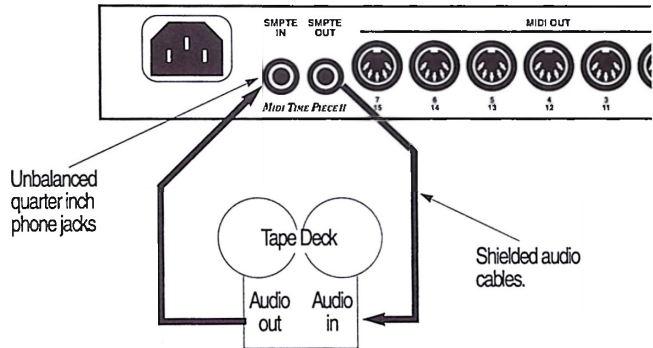


Figure 1-5: Making the SMPTE audio connections. Note that the SMPTE connections are made directly to the tape deck and are not passed through a mixer or any signal processing equipment.

Connecting foot pedals and foot switches

6. If you would like to use a foot pedal or foot switch with the MIDI Time Piece, connect them as shown below in Figure 1-6.

For more information about how these inputs can be used, see chapter 8, “Working with Knobs and Pedals”.

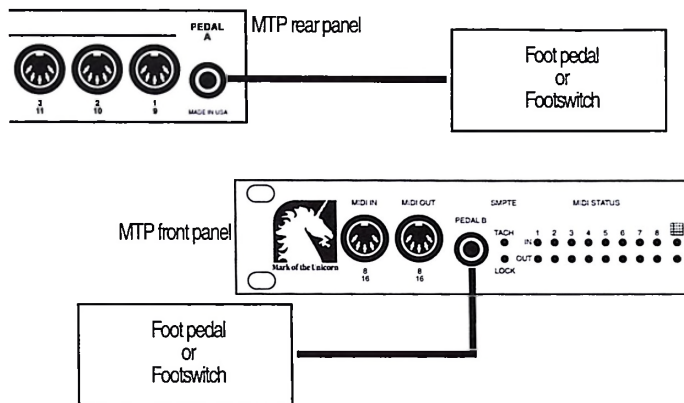


Figure 1-6: Connecting foot pedals or footswitches to the MIDI Time Piece.

Connecting an audio click input

7. If you would like to convert an audio click to MIDI, make the audio connection shown below in Figure 1-7.

For more information about converting an audio tempo source (such as a click, bass drum, tape deck signal, or other audio tempo source) to MIDI, see “Using an audio click as a tempo source” on page 72.

☞ Please note: only PEDAL A (on the rear panel) can serve as a click-to-MIDI converter.

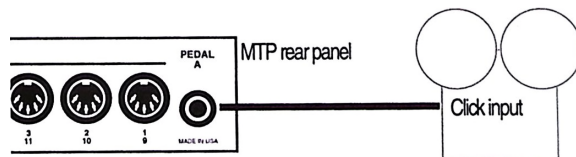


Figure 1-7: Connecting an audio click input. Note that only PEDAL A on the rear panel can serve this purpose.

Switching on the MTP

8. To complete the installation and setup, switch on the MTP now with the power switch on the front panel.

When you switch on the MTP for the first time, you'll see the ROM date, followed by Figure 1-8 in its liquid crystal display (LCD):

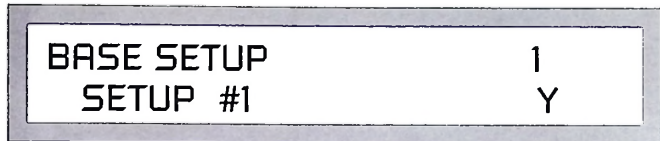


Figure 1-8

Using "FAST/1X" mode

Only follow this section if you have Performer (or other MIDI software that supports FAST mode), and you would like to use FAST mode. Otherwise, you can skip this section and proceed to "Where to go next" on page 22.

When the MIDI Time Piece communicates with software on the computer in FAST/1X mode, the MIDI Time Piece sends and receives data as fast as the Macintosh can. This rate can be between approximately 2 and 4 times faster than MIDI speed, depending on the model of the Macintosh. Since the Macintosh sets the limit in FAST mode, a fast Macintosh, such as a Mac IIci, produces higher throughput. As a result, the MIDI Time Piece can sustain greater data throughput to and from all 8 input and output cables. Fast mode alleviates irregular timing problems that occur when too much data is being transmitted (a situation often referred to as "MIDI logjam").

- ☛ Please note: one drawback of FAST mode is that it can cause system exclusive transfers to fail because of the extremely high data density in the message. If you will be using editor/librarian software, or if you will be doing system exclusive transfers with your sequencer, don't set the MTP to FAST mode; instead, skip this section, leave it set to 1 MHz, and set your software to 1 MHz as well.

9. To set the MTP to FAST mode, turn the WINDOW knob clockwise two clicks to the right, or if necessary, turn it back and forth until you see what is shown in Figure 1-9.



Figure 1-9

10. Once you see Figure 1-9 in the display, turn the CURSOR knob clockwise one click.

Now you should see what is shown below in Figure 1-10, and the word "1 MHz" should be blinking to indicate that it can be changed with the VALUE knob.

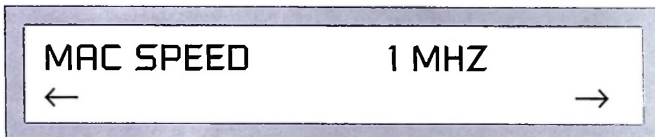


Figure 1-10

11. Turn the VALUE knob clockwise one click, or if necessary, turn it back and forth until you see the word FAST as shown below in Figure 1-9.

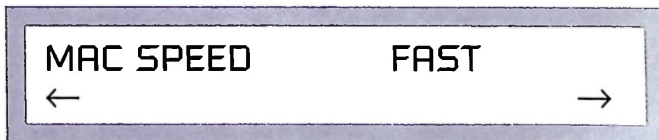


Figure 1-11

That's it! The MTP will remember this setting until you change it.

Where to go next

Where you go next depends, of course, on what you would like to do.

If you want to learn how to use the front panel controls...

Almost every MIDI Time Piece II feature can be controlled from the front panel. If you would like to get familiar with how to route inputs to outputs, stripe SMPTE time code, or other tasks without having to start up your computer, turn to chapter 12, "Using the MIDI Time Piece II Front Panel Controls".

If you want to install and set up the MTP II Console software...

Even though the MTP can be controlled from the front panel, you might find the software to be a much easier environment in which to make cable connections, stripe SMPTE time code, create and save MTP *setups* (which consist of the entire internal configuration of the MIDI Time Piece II), set up the pedal inputs, or other tasks.

If you want to use Performer or other MIDI software...

The MIDI Time Piece factory default settings allow you to play back and record with Performer (or other software that can support the MTP) without any further preparation of the MTP. The same is true for patch editor/librarian software. So from here, you can turn to your software documentation to get started.

If you are using Performer, see the following chapters in the Performer manual for information about setting up Performer for the MTP. We recommend reading them in the order listed below:

1. "Installation Guide"
2. "Getting Started with Performer"
3. "Performer and the MIDI Time Piece"

Chapter 2 *Installing a Network*

Installing two MIDI Time Pieces

This chapter describes how to set up several MIDI Time Pieces as a network. Because there are many possible setups, the first section explains the foundation of a MIDI network: connecting two MIDI Time Pieces together. You should read this section even if you have three or four MIDI Time Pieces because it explains in detail how you will connect them.

MIDI Time Pieces are connected to one another via their network serial ports using one of the two mini-DIN 8 cables that ship with the MTP II.

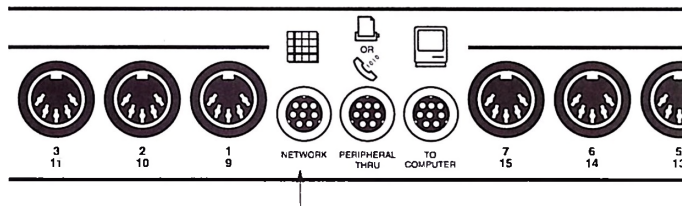
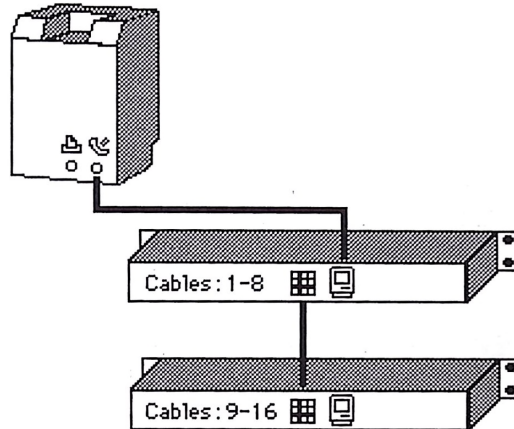
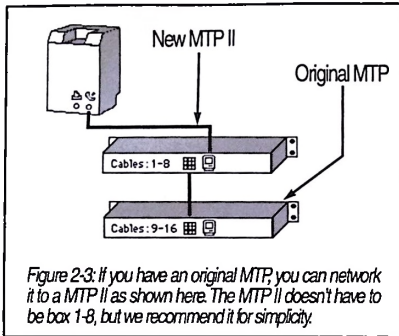


Figure 2-1: The network serial port on the rear panel

When two MIDI Time Pieces are networked together, they actually function as if they were one MIDI Time Piece with 16 MIDI INs and 16 MIDI OUTs, providing 256 separate MIDI channels!

One MIDI Time Piece becomes *Box 1-8* and is connected to the Macintosh in the same manner as described in the *Installation Guide*.

The second MIDI Time Piece, *Box 9-16*, is connected to Box 1-8 via the network serial port on each unit. When networked in this manner, each MTP can communicate with the other, and each can communicate with the Macintosh.



To connect a network consisting of two MIDI Time Pieces:

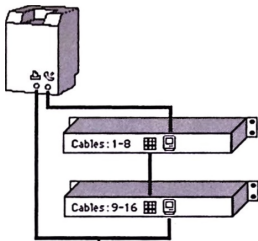
1. **Connect one MIDI Time Piece to the Macintosh as described in chapter 1, "Installation and Setup".**

If you are networking a new MTP II and an original MTP, connect the MTP II in this step to make it box 1-8.

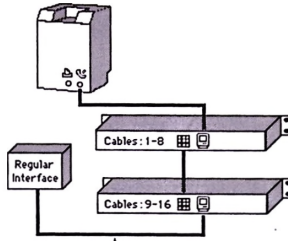
2. **Connect the second MTP to the first with a mini-DIN 8 cable via their network ports as shown in Figure 2-2 (or Figure 2-3).**

This second box can be either a new MTP II or an original MTP. The MTPs are now "networked" together.

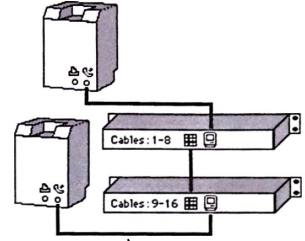
3. (Optional) If you want, you can connect the computer port on the second box to one of the three options shown below in Figure 2-4.



Option 1: connect the computer port to the printer port on the Macintosh. For cabizing software like Performer, you don't gain anything by making this connection, (except confusion, perhaps). We recommend only making this connection if you use MIDI software that requires the use of both serial ports.



Option 2: connect the computer port to a regular MIDI interface that you may have. This connection provides an additional 16 MIDI channels, as well as the additional MIDI INs and MIDI OUTs on the regular interface.



Option 3: connect the computer port to a second computer. Both computers have complete access to the entire MTP network.

Figure 2-4: You can make one of the three optional connections shown here with the computer port on box 9-16, regardless of whether it is an original MTP or a new MTP II.

☞ Please note: never try to connect three MTP II's directly to one another!

4. Proceed to the next section, "Making the network settings on the MTP II", to make important network settings.

Making the network settings on the MTP II

After you have networked two MTP's together, their network connections and box ID's must be set using the front panel controls.

Begin by following the procedure below on the MTP II that is connected to the computer (box 1-8). Then repeat the procedure with the second MTP II (box 9-16) if you have one connected:

- 1. Switch on the MTP II that is connected directly to the computer (box 1-8).**

When you switch on the MTP II for the first time, you'll see the following in it's liquid crystal display (LCD):

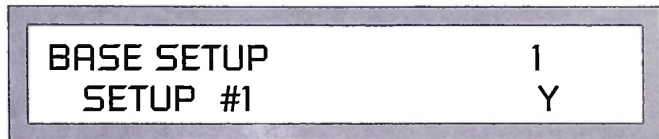


Figure 2-5

- 2. Turn the WINDOW knob clockwise two clicks to the right, or if necessary, turn it back and forth until you see what is shown in Figure 2-6.**



Figure 2-6

3. Once you see Figure 2-6 in the display, turn the CURSOR knob clockwise two clicks.

Now you should see what is shown below in Figure 2-6, and the word "MAC" should be blinking to indicate that it can be changed with the VALUE knob.

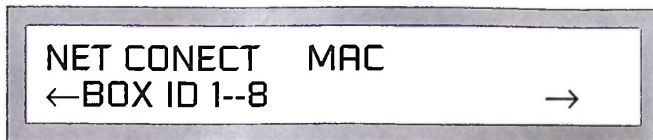


Figure 2-7

4. Turn the VALUE KNOB to the setting that describes what is connected to the network port on this MTP II.

Choose this:

MAC

MTP1

MTP2

If this is connected:

A regular MIDI interface, or a Macintosh

An original MTP

A MIDI Time Piece II

5. Once you have chosen the correct network connection above, turn the CURSOR knob clockwise one click.

Now the "1-8" will flash to indicate that it can be edited with the VALUE knob.

6. Choose the appropriate setting (1-8 or 9-16) by turning the VALUE knob.

If you are currently setting up the first of two MTP II's in the network, choose 1-8. If you are setting up the second one, choose 9-16. You should end up with settings that match those shown in Figure 2-2 on page 24. Make sure that the box ID's on two networked MIDI Time Pieces are never the same. One MIDI Time Piece should always be set to Box 1-8 and the other to Box 9-16.

You have completed the installation of a two-MTP network. If you have three or four MTP's, see "Connecting 3 and 4 MTP's" on page 28.

Connecting 3 and 4 MTPs

With three or four MIDI Time Pieces, the network is installed using the same basic procedures as for installing one or two MIDI Time Pieces. Two MIDI Time Pieces are connected to one Macintosh serial port, and then one or two more are connected to the other Macintosh serial port.

Please note: no more than two MIDI Time Pieces can be connected to each other. Therefore, the total number of MIDI Time Pieces allowed in a network is four. If you have three MIDI Time Pieces, two of them must be networked on one Macintosh serial port while a third is connected to the other port. Four MIDI Time Pieces are installed by connecting two networked MTPs, 1-8 and 9-16, to the modem port and two others to the printer port.

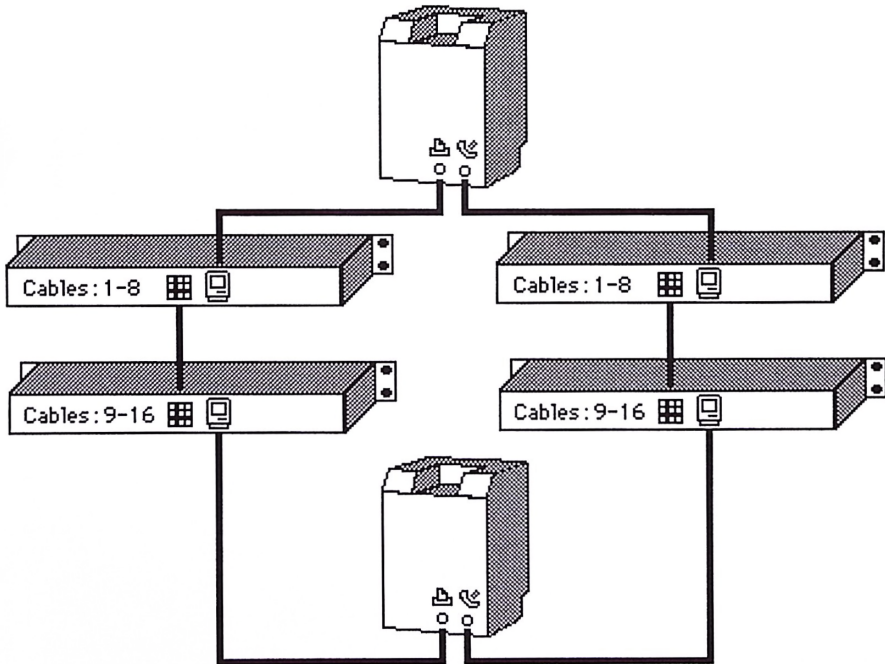


Figure 2-8: A full MIDI Time Piece network with four MTPs and two Macintosh computers. The second Macintosh is optional. This network provides 32 MIDI INs, 32 MIDI OUTs, 512 separate input channels, and 512 separate output channels. The cable between MIDI Time Pieces can be up to 1,000 feet long. The free Mac serial port on each Box 9-16 could alternatively be connected to a regular MIDI interface instead of a second Macintosh.

Connecting a second Macintosh

A two, three, or four-MTP network provides a free Mac port on each Box 9-16, which can be connected to a second Macintosh. Both computers have access to any cable in the network. MIDI software can run on both computers at the same time, and both programs can send and receive MIDI data on the network at the same time. The second Macintosh in a network is optional.

Connecting a regular MIDI interface

A MIDI Time Piece can transmit to and receive MIDI data from a regular MIDI interface that is connected as shown in Figure 2-10.

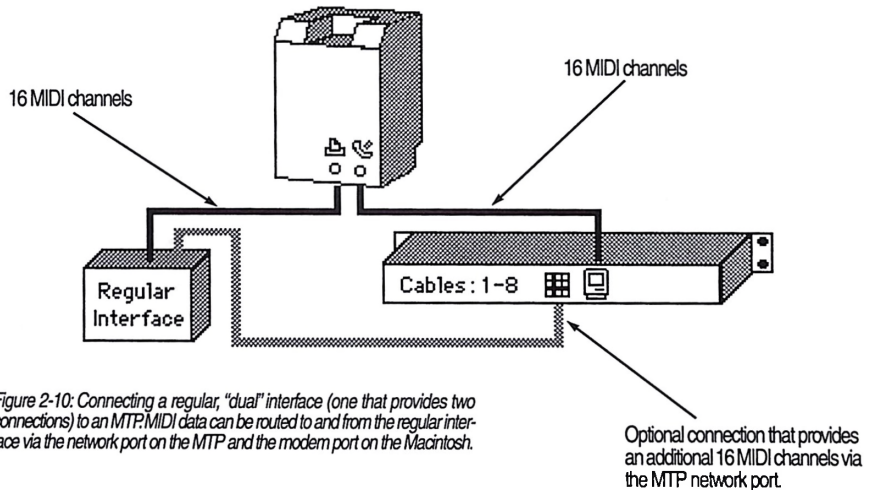
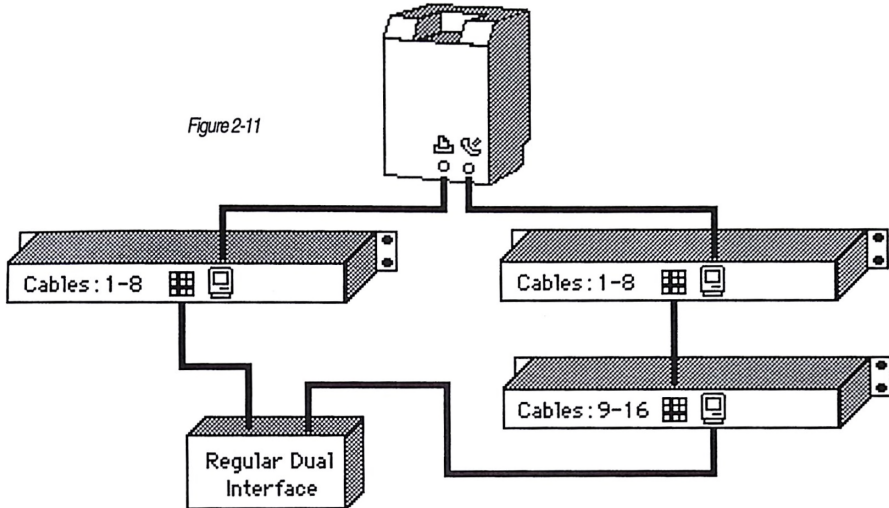


Figure 2-10: Connecting a regular, "dual" interface (one that provides two connections) to an MTP: MIDI data can be routed to and from the regular interface via the network port on the MTP and the modem port on the Macintosh.

| Below is another example:



When a regular interface is connected to a MIDI Time Piece, it functions normally—just like when it is connected to a Macintosh. MIDI data from its MIDI INs is sent through the DIN-8 cable to the MIDI Time Piece. Conversely, MIDI data from the MIDI Time Piece network port can be sent to its MIDI OUTs. To learn how to route data to and from an interface connected in this manner, refer to “Making connections to a computer or other device connected to the network port” on page 45.

Checking the network

After you have read the next chapter and installed the MTP II Console software, you can use the *Network Configuration* window to check the status of your network. This window shows you how many MIDI Time Pieces are connected to the network, how they are connected together, and how they are connected to your Macintosh.

Chapter 3 *Installing MTP II Console*

MTP II Console is not copy-protected. To install it make a MTP II folder on your hard disk and drag the MTP II Console application onto your hard disk as follows:

1. **Switch on your Macintosh.**
2. **Close all the windows on the screen.**
3. **Double-click the hard disk icon to open the hard disk window.**
4. **Insert the MTP II software disk.**
5. **Drag the MTP II Console program icon onto the hard disk window.**

After dragging in this manner, the screen will display a message that notifies you of the progress of the copy operation.

6. **When copying is complete, eject the MTP II master disk by dragging the floppy disk icon on the right-hand side of the screen into the Trash.**

This ejects the disk and removes the disk window from the screen.

7. **(This step is optional.) Make a new folder and drag the MTP II Console icon on the hard disk into the new folder.**

We recommend this because you will be creating files with MTP II Console and you'll find it easier to do so when saving them in the same folder as MTP II Console.

Opening MTP II Console for the first time

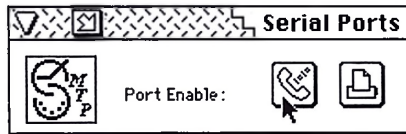
After installing MTP II Console, follow the procedure below to ensure that it has successfully established communication with the MIDI Time Piece II network.

MTP II Console serves as the "control center" for the MIDI Time Piece II. In explaining how to use MTP II Console, this chapter assumes that you are already familiar with the standard Macintosh user interface conventions, such as how to select options using check boxes and radio buttons, how to type and edit text, and so forth.

The MTP II Console's "look and feel" is modeled after Mark of the Unicorn's award-winning Performer sequencing program. Several aspects of this interface, including mini-menus, are explained later in this chapter. Even if you are familiar with Performer's conventions and appearance, we suggest that you skim this chapter to learn about features that are unique to MTP II Console.

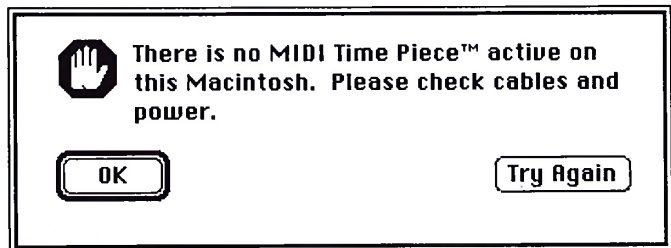
1. Double-click the MTP II Console icon.

When the MTP II Console opens, its menu bar appears with the File, Edit, Windows, and Utilities menus. In addition, the Serial Ports window appears.



2. Click the serial port(s) that the MIDI Time Piece II is connected to.

After you click the port(s), the software and hardware perform a handshaking operation to establish communication. This may take brief moment, and the lights on the front panel of the MIDI Time Piece II will flicker during this period. If the handshake is successful, the serial port button you clicked turns black, and a depiction of your MIDI Time Piece network appears in the Network Configuration window behind the Serial Ports window. If the handshake is unsuccessful, and the MTP II Console can't communicate with the hardware in the network for some reason, the following warning box appears:

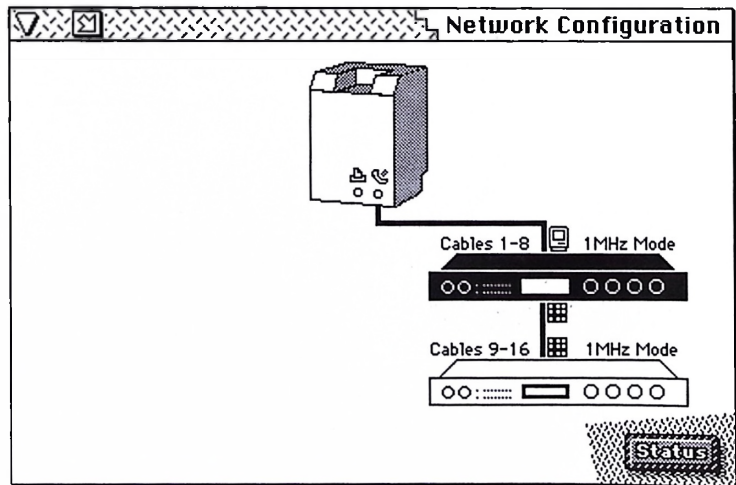


This message is usually produced by one of the following causes:

- The MIDI Time Piece is turned off. Power it up and click Try Again. If you wish to open MTP II Console even though a MIDI Time Piece is not present, click OK.
- The MIDI Time Piece II is not connected to the Mac, or it is connected improperly. Make sure your cable connection(s) to the MIDI Time Piece match Figure 1-1 on page 14, Figure 1-2 on page 15, or Figure 1-3 on page 15. Then click Try Again.
- The THRU switch on the front panel is pushed in (set to the modem/printer thru setting). Push it to release it and click Try Again.
 - Note: if AppleTalk is active on the port you select, MTP II Console will not be able to use the port until you switch off AppleTalk in the Chooser.

3. Close the Serial Ports window and observe the Network Configuration window behind it.

The Network Configuration window shows you what the MTP II Console "sees" on the Macintosh serial ports:



If you do not see a network configuration that matches your hardware setup, check power switches and cables.

☛ Please note: this window only displays MIDI Time Pieces in the network. It cannot show interfaces or other computers connected to the network (since other devices, unlike the MTP, offer no indication of their presence).

4. Click the Status button after you have made any adjustments.

Alternately, you can choose Verify Network from the Utilities menu, or press command-N. You can continue to make adjustments and click Status until the diagram in the Network Configuration window matches your hardware setup.

5. Once you have verified your MTP II network, you are ready to begin using the other features in MTP II Console.

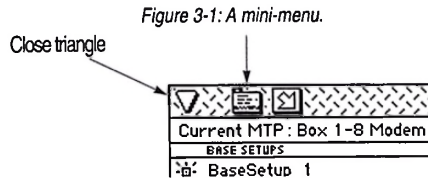
We recommend that you begin by naming the MIDI INs and OUTs in the network. After reviewing the rest of this chapter, see "Naming inputs and outputs" on page 39.

Software basics

Mini-menus

The following sections cover several important, unique characteristics about MTP II Console.

Most of the MTP II Console windows have mini-menus, which are located in the title bar of the window at the left-hand side next to the close triangle. A mini-menu acts just like a Macintosh main menu except that it provides commands that are specific to its own window.

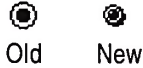


Buttons

Every time you click a button in an MTP II Console window, the DA sends a corresponding command to the MIDI Time Piece. Therefore, the buttons in the window always reflect the state of the MIDI Time Piece itself.

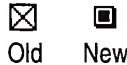
Radio buttons

MTP II Console buttons look a little different than the standard Macintosh ones. Radio buttons work such that you can only select one of the given choices; if you click a new button, the previously chosen one will deselect.



Check boxes

Check boxes are also a bit different. You can select any combination of them.



Push buttons

MTP II Console push buttons look different from but function the same way as standard push buttons.



Check box grids

Several MTP II Console windows display an entire grid of check boxes (because each window offers so many possibilities!) A check box grid looks like this:

	Channel															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
K2000																
O1 /wFD																
Drumkat																
D-110																
TX816																
S1000																
Proteus																
R-8																
Cable 9																
Cable 10																
Cable 11																
Cable 12																
Cable 13																
Cable 14																
Cable 15																
Cable 16																

Figure 3-2: A Check box grid.

The grid consists of check boxes placed edge to edge in rows and columns. The rows and columns are arranged into groups of four for clarity.

A check box in the grid represents a connection between its row and column numbers. For example, the box that is checked in the grid shown in Figure 3-2 indicates channel 9 on the Akai S1000 sampler.

Check boxes in a grid function the same way as regular check boxes. In addition, we have added several shortcuts that you will find extremely useful when using the grids. To select several adjacent boxes, click and drag. To select an entire column, click the column number. Similarly, to select an entire row, click the row number.

To deselect an entire row or column, click the number again. The row will only deselect if all boxes in it are selected.

MTP II Console provides many windows that control various aspects of a single MTP II.

When you have two or more MTP's in the network, you need to choose which one you are controlling with the software. There are two ways to choose:

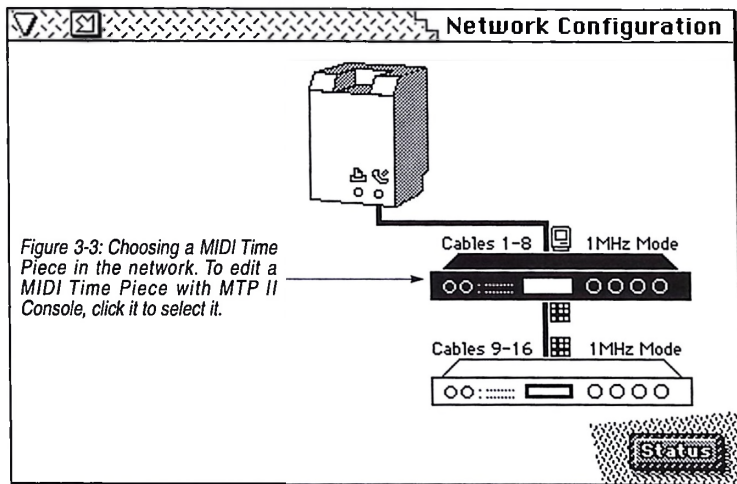
Using MTP II Console with a multiple MTP network

- Click the MIDI Time Piece icon in the Network Configuration window.

OR

- Choose the MIDI Time Piece name using the Box Select command in the Utilities menu.

For example, if you want to set up the Pedal A input on Box 1-8 on the modem port, you need to select that MIDI Time Piece in the Network Configuration window before you go to the Pedals & Knobs window to make your settings. The currently selected device highlights.



Switching serial ports when both are being used

If you have MIDI Time Pieces connected to both the printer port and the modem port, the windows in MTP II Console deal with only one port at a time. To switch ports, click either of the two Time Pieces connected to the port you want to see. Or use the Box Select command in the Utilities menu to select the current box.

Understanding the interaction between the software and hardware

MTP II Console always reflects the current state of the MIDI Time Piece II. (At least, it *should*.) If, at any time, you suspect that the windows in the software don't accurately reflect what's going on in the hardware for some reason, click the Status button in the Network Configuration window or choose Verify Network from the Utilities

Obtaining the ROM version

menu. Doing reestablishes communication between the software and hardware, and the software gets updated to the current state of the hardware.

When communication is successfully established, changes you make in MTP II Console are immediately reflected in the hardware.

However, changes you make in the LCD *are not reflected* in the software. To do so, choose Verify Network from the Utilities menu or click the Status button in the Network Configuration window.

To obtain the ROM version of any MIDI Time Piece in your network, double-click its icon in the Network Configuration window. A dialog box will appear displaying the ROM number for the MIDI Time Piece you click.

You can also watch for the ROM version display in the LCD when the MIDI Time Piece II is first powered up.

Chapter 4 *Making Connections with the Cable Routing Window*

Naming inputs and outputs

The Cable Routing Window provides an easy and powerful way for you to connect anything in your MIDI Time Piece II network to anything else in the network. This window provides you with complete control over the flow of MIDI data through the network, whether it contains one MIDI Time Piece or four.

Before you begin using the Cable Routing window, we recommend that you name the inputs and outputs to make it easier to remember what is connected to each one.

Use the “MIDI connections worksheet” on page 17 to jot down what is connected to each input and output on the MIDI Time Piece II (and any networked MIDI Time Pieces as well). Then enter the names as follows:

1. Click the input or output cable name to pop-edit it.

A pops up box appears to let you edit the name.

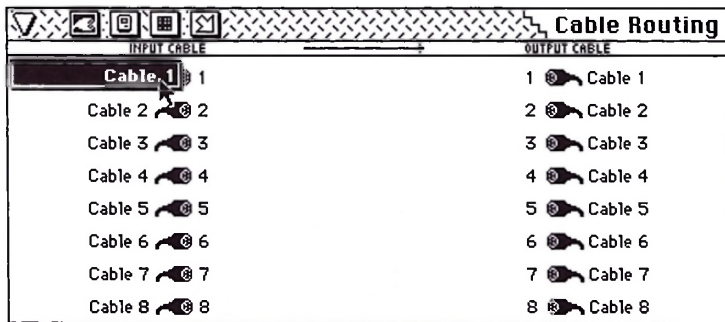


Figure 4-1: Naming the inputs and outputs in the MIDI Time Piece network.

- Please note: if you have two MIDI Time Pieces networked together, you will see 16 inputs and outputs in this window.

Switching serial ports when both are being used

Making a connection

2. Type the name you want, and press return to confirm your entry, or press the down (or up) arrow key to name the next (or previous) cable.
3. To change from one side to the other, press the tab key.

When you have finished, MTP II Console remembers these names.

If you have MIDI Time Pieces connected to both serial ports on the Macintosh, only one serial port's cables are shown at a time in the Cable Routing window. To switch ports, open the Network Configuration window and click a MIDI Time Piece connected to the port you want to see in the Cable Routing window.

To connect a piece of MIDI gear to another in the network:

1. Click the source cable icon on the left and drag to the destination cable icon on the right as shown below in Figure 4-2.

In the example below, the Kurzweil K2000 keyboard controller is being connected to the E-mu Proteus sound module.

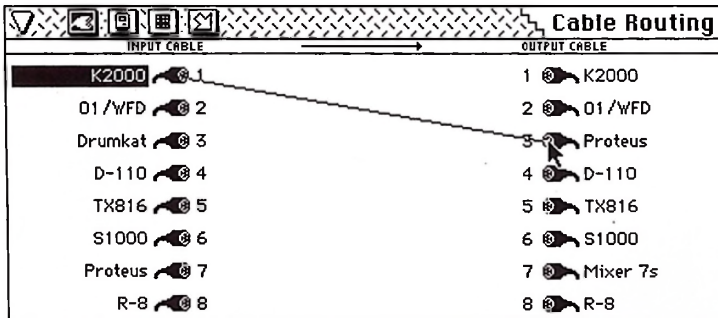
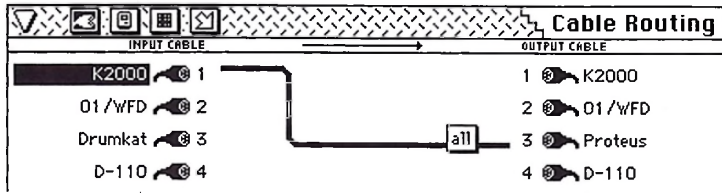


Figure 4-2: Connecting one piece of gear in the network to another.

- When you have finished, the connection appears in the window as shown below.

The "all" box means that all channels on the K2000 are currently routed to all channels on the Proteus. If you want to connect specific MIDI channels, see "Specifying channels in a connection" on page 42.



- Press return to confirm the cable connection.

Connecting one input to multiple outputs

To connect an input to more than one output, make each connection separately as described in the previous section. As a shortcut, drag from the input cable on the left over to the first output, and then drag directly to each additional output on the right. As you "touch" each output, it highlights and a connection is made.

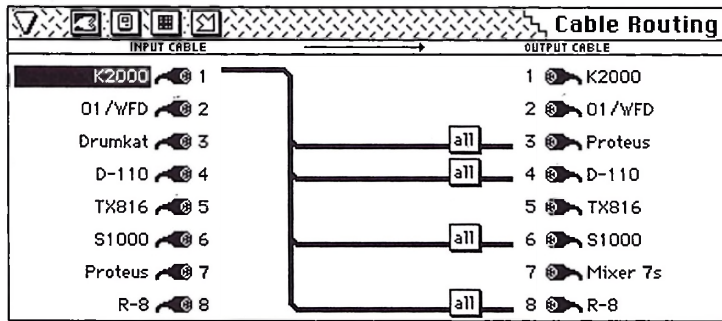
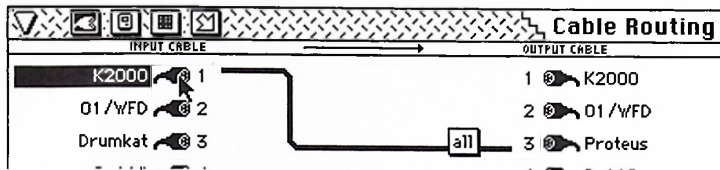


Figure 4-3: connecting one input to several outputs.

Selecting a connection

To select a connection, click the connection's input cable icon on the left or any one of its output cable icons on the right.



Selecting all connections

To select all connections, choose Select All from the Edit menu or press command-A.

Deselecting all connections

To deselect all connections, click anywhere in the middle of the window between the two columns of cables.

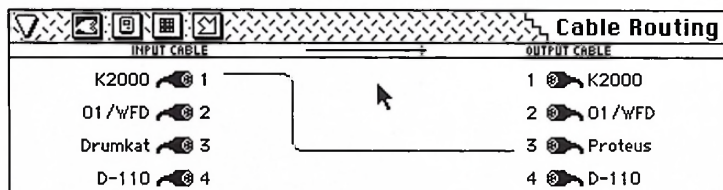


Figure 4-4: A deselected connection is a thin line.

Breaking a connection

To break a connection:

1. **Select the connection.**
2. **Press the delete key, or choose Cut or Clear from the Edit menu.**

Specifying channels in a connection

The MIDI Time Piece II lets you specify specific channels when you make a connection from one piece of gear to another.

For example, you can specify that channel 2 on the input is to be connected to channel 2 on the output. The input and output channel will always be the same in a connection.

Note, however, that different connections can have different channel assignments. For example, you could make a connection from your controller to channel 1 on one synth, and then make a second connection to channel 5 on another synth.

To specify the channel to be routed:

1. Click the input device.

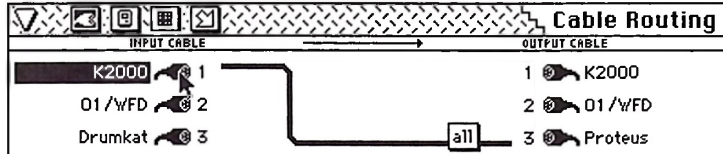


Figure 4-5: Specifying the output channel. To do so, click the input device and then pop-edit the box shown.

2. Click the box on the connection.



3. Type in the desired MIDI channel and press return to confirm your choice.

If you want, you can type in several channels as shown below. This is useful if you are using a keyboard split on your controller and you want to send the splits to different channels of the same synth. In Figure 4-6, the K2000 keyboard is split into three parts, transmitting on channels 1, 2, and 3, which are being connected to channels 1, 2, and 3 on the Proteus, as well as a few other

synths. If you want all channels to be connected, type "a" for "all" (connect all channels). When all channels are connected, channel 1 is connected to 1, 2 is connected to 2, etc.

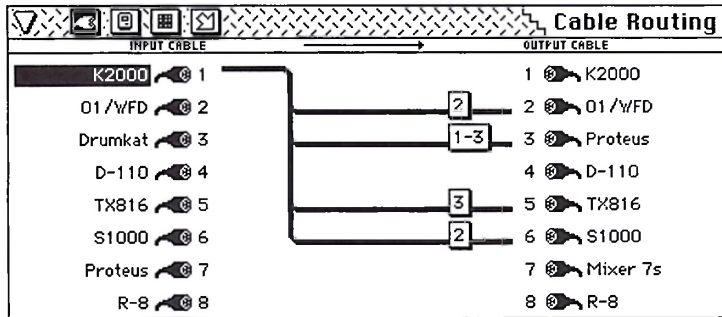


Figure 4-6: Specifying channels when making cable routing connections.

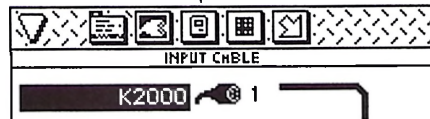
Note: channel remapping cannot be done in this window. For example, you cannot route channel 3 on the K2000 to channel 5 on the Proteus. To accomplish this, see chapter 6, "Channel Remapping".

Making and breaking connections to the computer

When the MIDI Time Piece ships from the factory, it is set up so that anything connected to the MIDI Time Piece II can talk to the computer, and the computer can talk to anything connected to the MIDI Time Piece II.

To edit these connections, click the computer button in the title bar of the Cable Routing window.

Figure 4-7: Click the computer button to see connections to and from the computer.



The display in the Cable Routing window only displays computer connections when this button is highlighted.

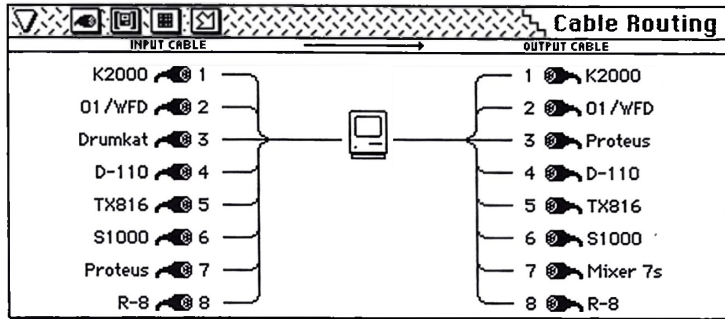


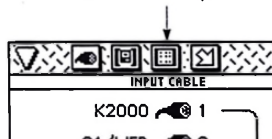
Figure 4-8: Editing computer connections. The column on the right represents inputs to the computer. The column on the left represents outputs from the computer.

Making connections to a computer or other device connected to the network port

Edit these connections in the same manner as described earlier in this chapter.

Connections to the network port can be viewed and edited by clicking the network port button in the title bar as shown below.

Figure 4-9: Click the network button to see connections to and from any device connected to the network port.



The Cable Routing window displays the network port connections when this button is highlighted.

- ☛ Please note! If you have a MIDI Time Piece II or an original MIDI Time Piece networked together via this serial port, the network port button changes to a second computer button, since it refers to the computer port on the second MIDI Time Piece (box 9-16).

Note that the network port connections can be displayed at the same time as the computer connections. If you would like to see the network connections alone, click the computer button to turn off the display of the computer connections.

Chapter 5 *Muting MIDI Data*

Basics

The Event Muting window is a sophisticated MIDI data filter that controls what types of data will be sent and received by each MIDI OUT and MIDI IN cable in a MIDI Time Piece network. You can filter out any type of MIDI data on any channel on any cable. In addition, each MIDI channel can have its own unique muting setup. The Event Muting window shows the muting status for each type of data on all 128 MIDI channels and all 16 cables at once, giving you immediate feedback on the state of your MIDI Time Piece network.

A simple way to think of data muting is this: imagine that each MIDI IN or MIDI OUT cable on the MIDI Time Piece has a filter just inside the socket. A MIDI data stream enters the filter and then continues on past the filter with certain types of data removed. The filter has simply “swallowed” the data types that are being muted.

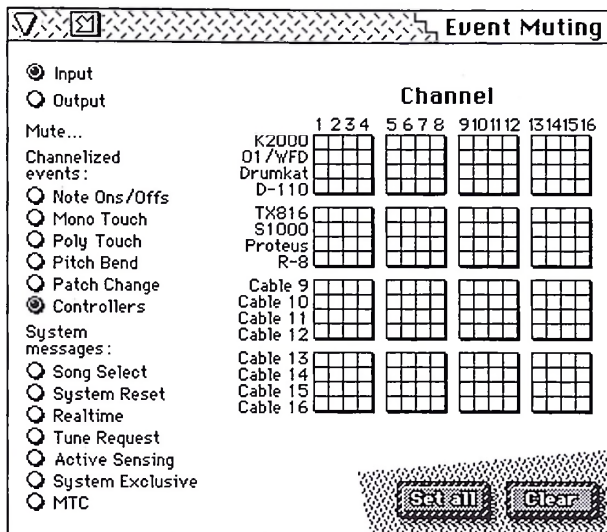
On a MIDI IN cable, data is muted before it enters the MIDI Time Piece network. On a MIDI OUT cable, data gets muted just before it gets transmitted out the cable.

Whenever you would like to mute data, begin with the following procedure:

- 1. If you have more than one MTP in the network, select the box you want to mute.**

See “Using MTP II Console with a multiple MTP network” on page 36.

1. Open the Event Muting window.



2. Choose Input or Output.

Click one or the other. Doing so sets the check box grid to either MIDI IN cables or MIDI OUT cables.

3. Select the type of data to be muted.

Click its radio button to the left of the window.

Now you are ready to click check boxes in the grid to mute data.

Muting a data type on a single channel

To mute a single data type on a single MIDI channel, click the check box for the channel in the grid, which can be located by looking for the channel number column (across the top of the grid) and its cable row (along the left side of the grid).

Muting a data type on all channels

To mute a data type on all 16 channels on a cable, click the cable name at the left edge of the check box grid. Doing so will select all check boxes in the row, selecting all channels for muting.

***Muting on all channels,
all cables***

To mute a data type on all channels and all cables, click the Input button and click Set All. This sets the grid to all MIDI IN cables and select all the check boxes in the grid. Similarly, click the Output button and click Set All again. This sets the grid to all MIDI OUT cables and selects all the check boxes.

Unmuting data

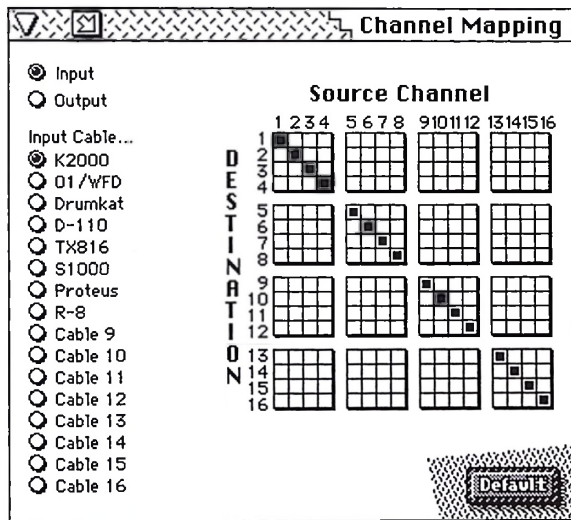
To unmute data on a single channel, deselect its check box. To unmute data on all channels and cables, click Clear.

Muting MIDI beat clocks

When MIDI beat clocks are transmitted to the MTP (via MIDI or from the Macintosh) they are echoed to all cables. If you do not want MIDI beat clocks sent to all your MIDI devices, mute Real-time data on the output cables for those devices.

Chapter 6 *Channel Remapping*

The Channel Mapping window controls the channelizing of MIDI data on all MIDI IN and MIDI OUT cables in a MIDI Time Piece network. With complete flexibility, this window can switch data from its current MIDI channel to any other channel immediately when the data either enters or exits the network.

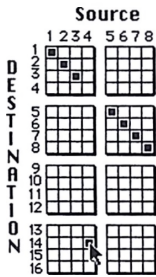


Basics

Channel mapping can be understood in much the same way as data muting described in the previous chapter: imagine that each MIDI IN or MIDI OUT cable on the MIDI Time Piece II has a filter just inside the socket. MIDI data enters the filter on one channel and as it passes through the filter, it gets switched to a different channel.

On a MIDI IN cable, data enters the MIDI Time Piece on a given channel. But before it goes anywhere else, either to the Macintosh or to a MIDI OUT cable, the Channel Mapping window can switch the data to a different MIDI channel.

Using channel mapping



On a MIDI OUT cable, data exits the MIDI Time Piece. But before it does, the Channel Mapping window can switch the data to a different channel.

Channel Mapping like this is useful in many different situations. For example, you may have a MIDI keyboard that only transmits data on MIDI channel 1. If you want to transmit its data on a different channel, you can map channel 1 on the keyboard's MIDI IN cable to any other MIDI channel. To the rest of the network, it will then appear as if the keyboard is transmitting on the new, destination channel.

To map a source channel to a different destination channel, locate the source channel's column (across the top of the grid) and click the check box in the column that corresponds to the desired destination channel (indicated along the left side of the grid).

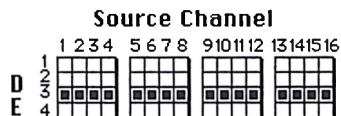
For example, to remap MIDI IN cable 1, from channel 4 to channel 14, click the check box in column 4, row 14 as shown to the left.

The default check box (column 4, row 4) will deselect, indicating that data will no longer be sent to channel 4. Now data received on MIDI IN cable 1, channel 4 will be remapped to channel 14.

Muting source channels

The Channel Mapping window will route each source channel to *only one* destination channel. On the check box grid, this means that one, and only one, check box can be selected in each column of the grid. You therefore cannot mute a source channel by deselecting all check boxes in its column. However, you can mute a channel by using the Event Muting window. For more information about muting, please refer to chapter 5, "Muting MIDI Data".

You can, however, select as many check boxes in a row as you like. Doing so simply routes data from all the source channels to a single destination channel.



Chapter 7 *Working with SMPTE*

If you are new to SMPTE synchronization

Using the MTP II to slave the Macintosh to SMPTE

This chapter explains how to use the MIDI Time Piece II to synchronize computer software and other devices to an audio tape recorder (ATR), video tape recorder (VTR), or other time code sources using SMPTE time code. It also explains how to generate SMPTE (a process commonly referred to as *striping*).

If you are not familiar with the process of synchronizing with SMPTE time code, see Appendix D, “SMPTE Synchronization Basics” before reading this chapter. It provides a definition of SMPTE time code and an explanation of how it is used for synchronizing MIDI devices to audio and video equipment.

The MIDI Time Piece II ships from the factory ready to lock the computer to SMPTE time code. If you have a tape that already has SMPTE time code on it, make the connections shown in Figure 1-5 on page 18 and then roll tape. The MTP II will read the incoming time code, lock to it, and generate MIDI time code, which it sends to the Macintosh. Any software running on the Mac can then slave to the time code. (Make sure the software is set up to lock to MIDI time code.)

When the MTP II locks to the time code, the green “LOCK” LED on the front panel glows steadily and the red “TACH” LED blinks regularly. In addition, the green computer OUT LED glows steadily, indicating that MIDI time code (MTC) is being sent to the Macintosh.

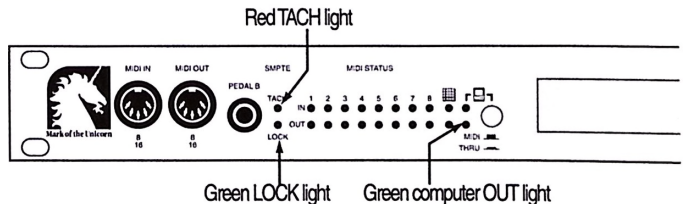


Figure 7-1: Converting time code. When the MTP II converts incoming time code, the red TACH light blinks, the green LOCK light glows steadily, and the green computer OUT light glows steadily as well.

Choosing a type of MIDI sync

If the LOCK and TACH lights do not behave as described, the MTP II is not successfully locking to the SMPTE time code. This could be a problem with the audio connections between the tape deck and the MTP II. It could also be that the SMPTE level is not high enough. See Appendix C, "Troubleshooting and Customer Support".

If the LOCK and TACH lights look OK, but the green computer OUT LED is not glowing, this means that the MIDI Time Piece II settings have been altered somehow such that it is not sending MIDI time code to the computer. To correct the settings, see "Getting a running update of SMPTE in the SMPTE Reader" on page 56.

The MIDI Time Piece supports two types of MIDI sync: MIDI Time Code (MTC) and Enhanced Direct Time Lock (DTLe). Most MIDI sequencers require MTC. Some, such as Performer Version 3.4 or higher, take advantage of DTLe, which accomplishes the same task as MTC but with higher efficiency.

SMPTE to MIDI Conversion

Convert incoming SMPTE to:

- Off
- MIDI Time Code (MTC)
- Direct Time Lock (DTLe)

If you are using Performer 3.4 or higher, choose the DTLe option. If you are using other software, or a hardware sequencer, choose MTC. Please note that Performer 3.3 or earlier cannot lock to either MTC or DTLe. Please contact Mark of the Unicorn for information about updating.

For a technical explanation of Enhanced Direct Time Lock, see Appendix E, "Enhanced Direct Time Lock".

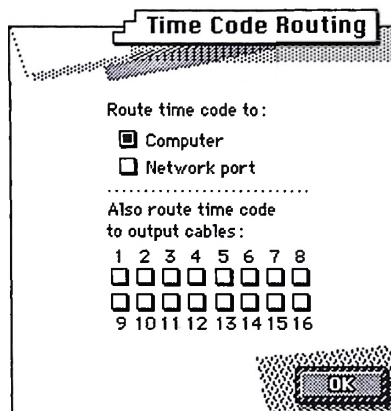
Slaving devices that are connected to the network or MIDI ports

At times, you may have the need to route MTC or DTLe to the network port on the MIDI Time Piece II. For example, the network port might be connected to a second Macintosh, which you need to slave to time code. Similarly, you may need to slave a MIDI device connected to one of the MTP II's MIDI OUTs.

To route time code to the network port or to a MIDI OUT cable:

1. Click the Time code routing button in the SMPTE Controls window.

A dialog box appears.



2. Click the network port check box or output cable check boxes as needed.
3. Click OK.

Switching off MIDI sync

MTC and DTLc can be muted by selecting the Off option in the MIDI Sync window. When you do so, the MIDI Time Piece stops generating MTC or DTLc. In addition, this causes the SMPTE Reader window to stop displaying SMPTE.

Using freewheeling to avoid time code dropouts

When the MIDI Time Piece II encounters a drop-out—a series of missing or unreadable frames—in the SMPTE time code, it “freewheels” past them, pretending that they were not missing by briefly generating its own code to make up for the missing frames. The default freewheel value is 4 frames. This means that the MIDI Time Piece II will continue to generate time code for four more frames after it stops receiving time code. If it does not receive any more time code after four frames, it will stop converting.

The Freewheel amount can be adjusted between 0 and 32 frames. This allows the MIDI Time Piece II to maintain lockup even over the most pernicious SMPTE drop outs.

Getting a running update of SMPTE in the SMPTE Reader

If you encounter a time code drop out that causes the MIDI Time Piece II to stop converting for a moment, try increasing the freewheel amount in the SMPTE Controls window or front panel LCD display. Try adding just a few frames at a time when adjusting the amount.

- ☛ Remember: when you increase the freewheel amount, you also increase the amount of time that the MTP II keeps converting when you stop tape. To make the MTP II as responsive as possible, only raise the freewheel amount as high as necessary to overcome the drop-out(s) you are encountering.

When the MTP II is shipped from the factory, it is set up so that the SMPTE Reader will automatically provide a running update of the SMPTE time code being generated or converted by the MIDI Time Piece II. (This is true for both the SMPTE Reader that is built in to the SMPTE Controls window and the stand-alone SMPTE Reader window.)

- ☛ The LCD display on the MIDI Time Piece II front panel also provides a running update of the SMPTE time code.

If the SMPTE reader is inactive while the MIDI Time Piece II is generating or converting time code, check the following things:

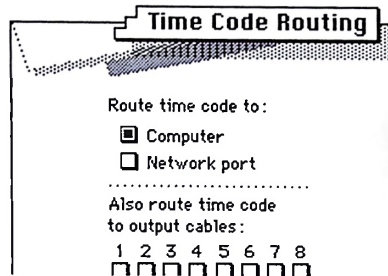
- Make sure that the “Convert incoming SMPTE to” option is set to either MTC or DTLe

SMPTE to MIDI Conversion

Convert incoming SMPTE to:

- Off
- MIDI Time Code (MTC)
- Direct Time Lock (DTLe)

- Click the “Time code routing” button and make sure that the computer check box is checked



- ☛ Note! The SMPTE Reader only displays a running update of incoming SMPTE when the MTP II software is the active application. If you are running the software in MultiFinder or in System 7, click the SMPTE Reader window or SMPTE Controls window to make the reader active. Then it will display a running update. This is also true when running the MTP II software with Performer. When Performer is active, Performer's Counter window will provide a running update; when the MTP software is active, the SMPTE Reader will provide a running update. The Counter window and the Reader window cannot show a running update at the same time.

Striping SMPTE

Along with its other capabilities, the MIDI Time Piece is a SMPTE time code (“SMPTE”) generator. It generates an audio form of SMPTE time code called *Longitudinal Time Code* (LTC).

You can use the SMPTE Controls window in the MIDI Time Piece II software or the MIDI Time Piece II front panel LCD to generate SMPTE. This section covers how to do so with the software. See “Using the SMPTE controls” on page 106 to learn about how to stripe SMPTE via the LCD display.

Note that the MIDI time Piece II always generates fresh time code while reading existing time code. You can use this capability to:

- Regenerate fresh time code that is based on existing time code, and eliminate drop-outs in the original code

■ Lengthen existing time code tracks

For information about regenerating time code, see “Regenerating fresh time code (“jam syncing”)” on page 61 and “Lengthening a SMPTE track” on page 62.

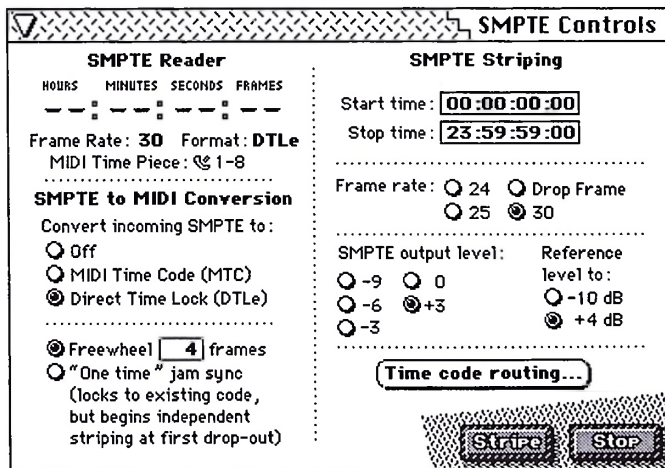
Use the procedure below to generate new code from scratch:

1. Make the audio cable connections shown in Figure 1-5 on page 18.

We recommend that you do not pass the time code output from the MIDI Time Piece II through a mixer or any form of signal processor. If you must go through a mixer, be sure equalization is flat.

2. If your tape deck has dbx noise reduction, be sure to defeat the noise reduction on the track you are recording SMPTE time code.

3. Open the SMPTE Controls window in the MIDI Time Piece software.



4. Enter a start time.

To edit the start time, click inside the box and type a number. To move to the next field, press Tab. Each field allows valid numbers only, e.g. you cannot type “72” in the minutes field. A standard audio industry practice is to start at 01:00:00:00 (one hour) to avoid crossing the 24-hour count during preroll.

5. (Optional) Enter a stop time.

The stop time is the frame at which the MIDI Time Piece II will cease generating time code. This is handy because you can start striping and then leave the setup unattended and still have the striping stop at any desired frame. If the stop time doesn't matter to you, or if you will be stopping manually, just leave it set to 23:59:59:00.

6. Choose the necessary frame rate.

We recommend 30 frames per second (fps), unless you are working with film (24 fps) or color video in a situation where the SMPTE numbers must match actual elapsed time (Drop Frame). For more information about Drop Frame time code, see “What is drop frame?” on page 153.

7. Choose an audio reference level (-10 or +4 dB).

If the audio inputs on your recording equipment are referenced to -10 dB, set the reference level to -10 dB. If the audio inputs on your recording equipment are referenced to +4 dB, set it to +4 dB.

8. Choose a SMPTE output level.

The goal when striping SMPTE is to get the VU meter on the tape deck to read approximately -3. When the output level is set to 0, the MIDI Time Piece generates a SMPTE audio signal equivalent to the reference level (-10 or +4), which should produce a zero VU reading on the meter. If not, you may need to choose a higher or lower output level to compensate for the difference. See the “Getting a -3 VU level when striping SMPTE” on page 60 later in this chapter for more information.

Striping hints

Getting a -3 VU level when striping SMPTE

9. Click Stripe.

Striping will begin at the frame shown in the Start Time box. The SMPTE Reader will begin to roll. While striping, you can close the SMPTE Controls window, and you can even switch to another application or Quit the MIDI Time Piece II software.

10. To stop striping, click Stop or wait until the Stop Time is reached.

You can stop striping at any time.

Of course, if you want to stripe a tape and meanwhile get on with other work, you can quit the MTP II software. Striping will proceed in the background.

The goal when striping SMPTE time code is to generate an error-free signal strong enough for reliable lockup, but not so strong that the SMPTE bleeds through to adjacent tracks.

There are several ways to handle this. One way is to leave an empty track on your multi-track tape deck as a buffer between the SMPTE and other tracks. With a buffer track, SMPTE can be recorded at very strong ("hot") levels (above 0 VU) without risk of bleedthrough.

If your tape deck has no tracks to spare, a good level at which to record is around -3 VU. That is, the VU meter for the SMPTE track on your tape deck should read -3 when you stripe the SMPTE. This records SMPTE that is hot enough for reliable lockup and weak enough so that it will not bleed into adjacent tracks. -3 VU is only a rule of thumb, though, so don't hesitate to use other levels if they work better for you.

When the output level in the SMPTE Controls window is set to -3, SMPTE from the MIDI Time Piece should create a -3 VU reading on the tape deck (assuming, of course, that you have set the reference level, either -10 dB or +4 dB, to match the tape deck). However, you may have to make adjustments to the level to establish the -3 reading. Also remember that many tape decks display levels during recording that are slightly different from the level readings during playback. Therefore, to get a -3 reading during playback, try recording a short bit of time code at -3 and then observe the VU reading during playback. You may have to adjust the output level setting in the SMPTE Controls window and record again to achieve a -3 reading.

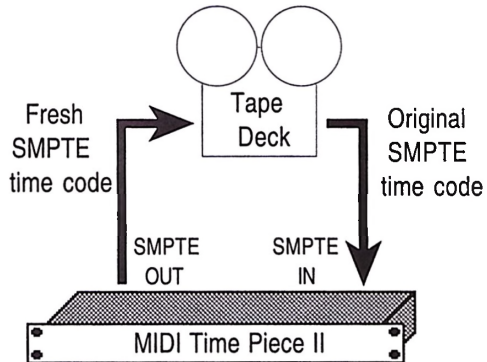
Regenerating fresh time code (“jam syncing”)

SMPTE is a problem when you are copying tapes: it degrades rapidly every time you try to copy it from one tape to another. Often, the SMPTE signal deteriorates so much that it will not be recognizable by any SMPTE-to-MIDI converter, including the MIDI Time Piece II, and you will no longer be able to lock to it.

The solution to this problem is to use the MIDI Time Piece II to regenerate fresh SMPTE time code that matches the original time code while you are copying the tape. Some people refer to this process as *jam syncing*. When the MIDI Time Piece receives a SMPTE signal on its SMPTE IN cable, it always regenerates a fresh signal that exactly matches the incoming signal and sends it out the SMPTE OUT cable (except for drop-outs, which it eliminates with freewheeling).

To regenerate SMPTE:

1. **Connect the SMPTE IN cable to the original SMPTE track, and connect the SMPTE OUT cable to the destination SMPTE track (which could be on a different tape deck).**



2. **Set the freewheel option in the SMPTE Controls window to at least 4.**

This ensures that drop-outs in the old code are not reproduced in the fresh code.

Regenerating over large drop-outs with the “One time” jam sync option

Lengthening a SMPTE track

Slaving Performer to the MIDI Time Piece II

- 3. Roll tape and set the audio levels as described in “Getting a –3 VU level when striping SMPTE” on page 60.**

When the MTP II is reading the old time code, it generates fresh time code via its SMPTE OUT jack.

- 4. When the levels are set, roll tape and convert as normal.**

The MIDI Time Piece II automatically creates fresh SMPTE time code that matches the original time code and its relation to the other tracks on the tape. In addition, the MIDI Time Piece II freewheels over drop-outs in the old time code so that the new, clean code has none.

If you have a large drop-out in the existing time code, use the “One time” jam sync option in the SMPTE Controls window and follow the above procedure. When the MIDI Time Piece II encounters its first drop out in the original time code, it seamlessly begins striping on its own.

To stop striping, click the Stop button or wait until the MTP II reaches the stop time.

If the time code on your SMPTE track ends too early and you need to add more code, you can use the “One time” jam sync option as described in the previous section. To do so, feed the original track into the MIDI Time Piece II and record the fresh code onto a new track. Be sure to start from the beginning so that you regenerate the entire length of the original track. When the MIDI Time Piece II reaches the end of the original track, it will begin striping on its own.

To stop striping, click the Stop button or wait until the MTP II reaches the stop time.

To slave Performer to the MIDI Time Piece II, you must have Performer Version 3.4 or higher. To slave Performer to the MIDI Time Piece:

- 1. Start Performer and open the MIDI Interface dialog box in the Basics menu.**

Be sure that the MIDI Interface dialog box is set to the same mode as the MIDI Time Piece II. Also make sure that the MIDI Time Piece check box is selected.

2. Select the appropriate options in the Receive Sync dialog box in the Basics menu.

Specify the port to which the MIDI Time Piece is connected by clicking either the modem or printer port button. Also, choose Direct Time Lock as the "Type of sync."

3. Set the frame rate.

4. Click OK to confirm your choice.

5. Set the sequence starting frame.

Select Set Chunk Start from the Counter window mini-menu and enter the starting time. This should be a SMPTE time that is within the range of the SMPTE striped on the tape it will be slaving to.

6. Select Slave to External Sync from the Basics menu.

This puts Performer into slave mode, waiting for sync information from an external device.

7. Click on the Play or Record button in the Controls window.

The Play button will turn grey, meaning that Performer is waiting for sync information to start.

8. To start Performer, start the external device.

When Performer is locked and playing, the Play button will turn to solid black. Once locked, Performer will follow, start, stop and rewind under control of the master.

9. To terminate the lock up with the master, click on the Stop button.

Clicking on the Stop button will stop Performer and remove it from the master's control. This can be done at any time. To return to normal operation, turn off Slave to External Sync by reselecting it from the Basics menu.

With the MIDI Time Piece II, it is not necessary to click Play in Performer before you roll tape. You can click the Play button in Performer even with the tape rolling and Performer will jump right into sync within a second or so.



Chapter 8 *Working with Knobs and Pedals*

This chapter explains how you can use the four knobs on the front panel of the MIDI Time Piece II and the two pedal inputs (A and B) to:

- Generate MIDI data, such as notes, controllers, patch changes, pitch bend, and system exclusive data
- Route the data from the knob or pedal to anywhere in the MIDI Time Piece network
- Convert an audio tempo source such as an audio click into MIDI data in order to slave MIDI hardware or software to the audio tempo source

This chapter explains how to do these things with the Time Piece Console software. To learn how to program the knobs and pedal from the front panel LCD, see chapter 12, “Using the MIDI Time Piece II Front Panel Controls”.

The first thing you need to do is select which knob or pedal you are going to program.

- 1. Open up MTP II Console.**
- 2. If you have more than one MIDI Time Piece, choose Network Configuration from the Windows menu and select the box that has the knob you want to set up.**

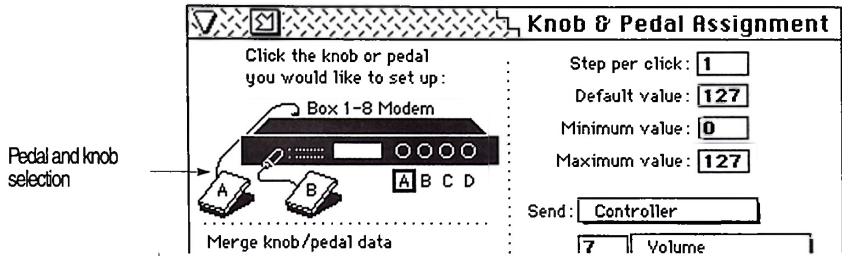
For more information, see “Using MTP II Console with a multiple MTP network” on page 36.

- 3. Choose Knob & Pedal Assignments from the Windows menu.**

Choosing a pedal or knob to program

4. Click the knob or pedal that you want to set up.

A box appears around the knob or pedal to indicate that it is selected. Parameters for it appear to the right.



Setting up a knob

Note: before you set up a knob, you should decide whether you want to save the knob settings as a modifier which can be remembered by the MIDI Time Piece II and recalled either with the software, the front panel LCD, or a MIDI patch change. If you would like save the knob setting as a modifier, go to the Setups & Modifiers window and add a new modifier before you begin the procedure below:

1. Set the steps per click.

This option determines the value change of the controller, sysex, or patch change messages that are sent every time you turn the knob one click. Normally, the value will change by one. You could, however, get a more dramatic change with each click of the knob by making this value five, for example. Then the knob will generate values of 0, 5, 10, 15, 20, 25, etc. on each click.

2. Set the default value.

The value must be between zero and 127. When you first call up the setup or modifier with this knob setting, the knobs will be set to this initial value.

3. Enter a minimum and maximum value.

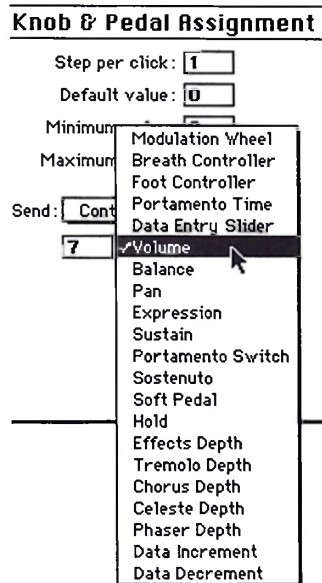
These values determine the lowest and highest value that the knob can generate.

4. Select the type of data you wish to enter in the Send pop-up menu.

A knob or pedal can generate MIDI notes, pitch bend, controller data, sysex data, or patch changes.

5. If you choose to send a controller, select the type of controller you wish to generate.

You can either type in the controller number or choose it by name from the pop-up menu.



6. If you chose system exclusive, see "Programming a knob or pedal to send sysex data" on page 74.

7. Proceed to "Making a pedal or knob output assignment" on page 69.

Setting up a pedal

Note: before you set up a pedal, you should decide whether you want to save the pedal settings as a modifier which can be remembered by the MIDI Time Piece II and recalled either from the Setups & Modifiers window, from the front panel LCD, or from a

MIDI patch change. If you would like save the pedal setting as a modifier, go to the Setups & Modifiers window and add a new modifier before you begin the procedure below:

1. Set the pedal polarity to positive or negative.

Negative polarity reverses the direction of the pedal, so that if it normally goes up when you press down, negative polarity will make it go down (and vice versa). If you aren't sure which to choose, use positive and then check it by going to "Verifying that the pedal is working" on page 111.

2. Describe the type of pedal or input that is connected.

You have five choices shown below in Figure 8-1. Roland and Korg expression pedals are continuous control pedals, where the MIDI Time Piece II reads the position of the pedal and maps it to a MIDI value between zero and 127. The foot switch setting should be used for momentary foot pedals. If you choose the click-to-MIDI option (which is only available on the Pedal A input on the rear panel), skip the rest of the steps in this section and see "Using an audio click as a tempo source" on page 72.

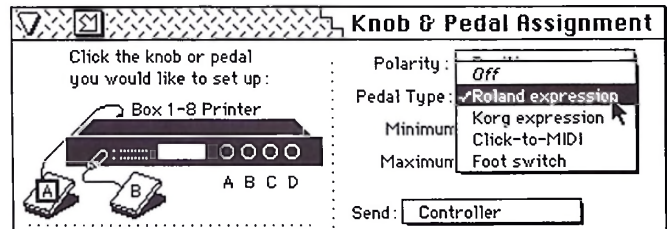


Figure 8-1: Setting the pedal type.

3. Enter a minimum and maximum value.

These values determine the lowest and highest value that the pedal can generate (range 0-127). If you are working with a foot switch pedal, these are the two values that the pedal will generate.

4. Select the type of data you wish to enter in the Send pop-up menu.

A knob or pedal can generate MIDI notes, pitch bend, controllers, patch changes, or sysex data.

Making a pedal or knob output assignment

- 5. If you chose controller, select the type of controller you wish to generate.**

You can either type in the controller number or choose it by name from the pop-up menu.

- 6. If you chose system exclusive, see “Programming a knob or pedal to send sysex data” on page 74.**
- 7. Proceed to “Making a pedal or knob output assignment” on page 69.**

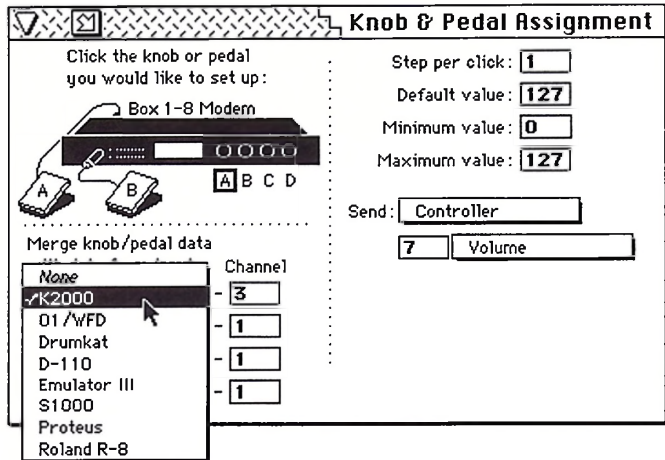
The output from a pedal or knob cannot be assigned directly to an output cable or serial port. Instead, the knob or pedal data is assigned to an input cable, and from there it is routed to whatever outputs that input cable is routed to.

For example, let's say that we want a knob to generate MIDI volume (controller number 7) and then send it to three synths in our MIDI studio (a Proteus, Roland D-110, and an S1000). Here is how to do so:

- 1. Assign the knob to one of the MIDI Time Piece II's MIDI inputs by choosing the input from the pop-up menu provided.**

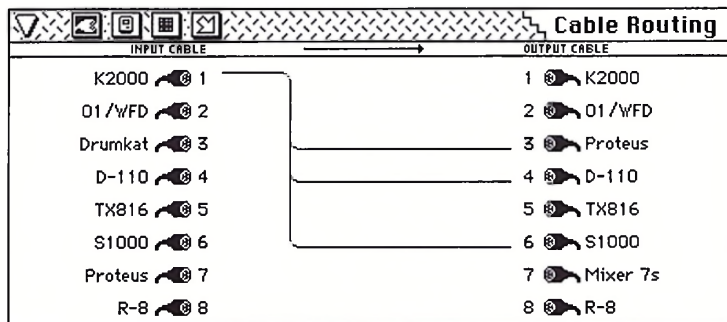
If you are using a MIDI controller, assign the pedal or knob to the controller's input. Then the knob or pedal data will be routed to the same outputs as the controller. If you have an input cable that

isn't connected to anything else, you could use it instead. In the example below, the Kurzweil K2000 input (input cable 1) is chosen.



2. Open the Cable Routing window and route the input to the outputs you would like the knob data to go to.

In this example, the knob is being routed to the Proteus, D-110, and the S1000 via the K2000 input.



Sending knob data

3. **Once you have completed the knob or pedal settings with the above output assignment, be sure to save the settings as a modifier or as part of the current basic setup.**

For more information, see "Adding one or more commands to a setup or modifier" on page 80.

Once you have programmed one or more knobs, you can make them generate the data you have programmed as follows:

1. **Press the SHIFT button on the front panel of the MIDI Time Piece II so that the green LED is lit.**

When the red LED is lit, the knobs control the MIDI Time Piece II LCD display. When the green LED is lit, the knobs switch into their data transmission mode and send MIDI data instead.

2. **Turn the knobs to send the data.**

Notice that the four knob values are displayed in the LCD on the front panel.

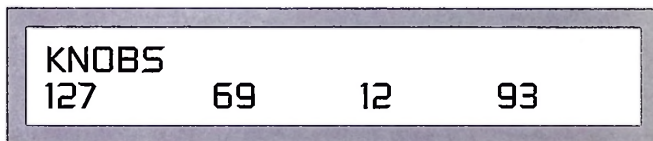


Figure 8-2

3. **To switch the knobs back so that they again control the LCD display, press the SHIFT button such that the red LED is lit.**

You can freely switch back and forth.

Sending pedal data

Saving the knob settings as part of a base setup

Once you have made the pedal data assignment and output assignment as described in the previous sections in this chapter, no other preparation is necessary. Just press the pedal.

For information about how to save knob and pedal settings as part of one of the eight MIDI Time Piece II base setups, see "Adding one or more commands to a setup or modifier" on page 80.

Saving the knob settings as a modifier

Using an audio click as a tempo source

You can save one or more knob or pedal settings together as a modifier. Doing so allows you to recall the settings instantly with the Setups & Modifiers window, the Patch List window, the front panel LCD, or a MIDI patch change without changing the rest of the settings in the MIDI Time Piece II. For information, see “Adding one or more commands to a setup or modifier” on page 80.

The MIDI Time Piece II can convert an audio click into any MIDI event. The audio click can be played back from a tape deck or generated live by a drummer. This feature can be used for many purposes. Below are a few ideas:

- Recording the click's tempo map into a sequencer
- Slaving a sequencer to a click track
- Triggering drum samples

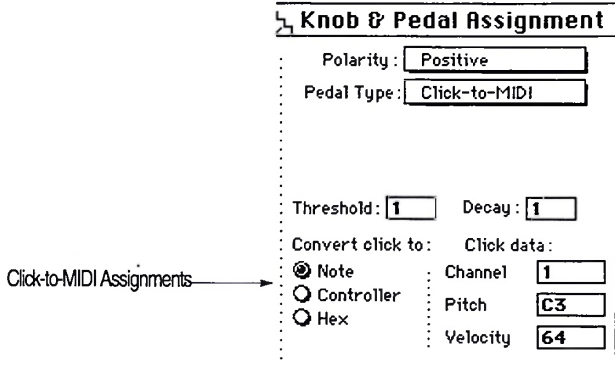
This feature can be used in conjunction with Mark of the Unicorn's Performer program to slave a sequence to prerecorded music on tape while referenced to SMPTE time code. For more information, please refer to the Performer (Version 3.5 or higher) User's Manual.

To convert an audio click into MIDI:

- 1. Be sure that the audio click source is connected to the PEDAL A phone jack on the rear panel of the MIDI Time Piece II.**
- 2. Open the Knob & Pedal Assignments window in MTP II Console.**
- 3. Click Pedal A.**

4. Under Pedal Type, select Click-to-MIDI.

The click-to-MIDI options appear in the right-hand side of the window.



5. Set the Threshold and Decay.

The threshold can be set anywhere on a scale from 0 to 70. The audio click must be loud enough to reach the threshold. A soft click will require a low threshold. Try to set the threshold as high as possible, however, to avoid false triggering from noise. Decay is meant to prevent doubled attacks. The decay can be set from 1 to 31. Low values make the decay longer; high values make it shorter. Try to set the decay as long (low) as possible, but if you are working with a faster tempo, don't make it too long or you will miss beats. The decay also determines the duration of the MIDI note generated by the MIDI Time Piece II. A low decay produces a long duration; a high decay produces a short duration. You may need to experiment to adjust these values. See "Checking the click-to-MIDI settings" on page 113.

6. Choose the data type you wish, and set the data for the event.

7. Make the desired output assignment for the MIDI click data.

For more information, see "Making a pedal or knob output assignment" on page 69.

Click input hints

Programming a knob or pedal to send sysex data

8. Check to make sure that the MIDI Time Piece II is successfully reading the click.

See “Checking the click-to-MIDI settings” on page 113.

If the MIDI Time Piece II reads the audio click erratically, such as generating doubled attacks, try adjusting the threshold and decay values. If you still have trouble, try attenuating the audio signal from the click source or through a mixer. The PEDAL A input is purposefully sensitive so that it can detect a low-amplitude signal.

If you are generating the click that the MIDI Time Piece II will convert, set the audio level fairly high (at around 0 dB). Also, record a short, transient click sound with no reverb or other effects. A short and precise click sound will produce the best, most reliable results.

A knob or pedal can transmit a sysex message up to 28 bytes long. You define a variable byte within the message. As you press the pedal or turn the knob, the knob generates a continuous stream of sysex messages; each message is exactly the same except for the value of the variable byte. It changes in correspondence with the current position of the pedal or knob on a scale between zero and 127.

This feature is ideal for creating smooth, real-time changes to parameters on synthesizers and other MIDI devices.

The reason for the 28-byte limit is that a message larger than 28 bytes cannot be transmitted efficiently enough to be generated in real time.

To program the sysex message:

1. **Set up the knob or pedal as described in “Setting up a knob” on page 66 or “Setting up a pedal” on page 67.**

Once you have selected system exclusive as the type of data, you'll see the sysex data entry window.

Knob & Pedal Assignment

Step per click:

Default value:

Minimum value:

Maximum value:

Send:

Length: 6

0: F0 00 00 33 |xx F7 ...3..

6:

12:

18:

24:

2. **Click inside the sysex data entry box and type in the bytes necessary.**

The message can be up to 30 bytes long, including the F0 and F7 at the beginning and end of the message.

3. **For the variable byte, type “xx”.**
4. **Set the output assignment as described in “Making a pedal or knob output assignment” on page 69.**

Chapter 9 ***Building Setups and Modifiers***

About this chapter

This chapter explains how to manage multiple internal settings in the MIDI Time Piece II. It explains how to create and save multiple configurations as *setups* and *modifiers*, which provide you with a tremendous degree of control and flexibility over the MIDI Time Piece II.

You can then recall configurations as setups and modifiers from the front panel LCD. See “Selecting the current base setup” on page 100 and “Calling up a modifier” on page 101.

Or you can recall them with MIDI patch changes from a MIDI controller as described in “Recalling patches via a MIDI patch change” on page 89.

You do not need to know the information in this chapter for basic operations of the MIDI Time Piece II. Instead, you can “set it and forget it” if doing so suits your needs. Read this chapter if you are interested in creating and saving different settings within the MIDI Time Piece II that can be easily recalled.

What is a “base setup”?

Think of a setup as a basic configuration of all the MIDI Time Piece II’s current internal settings. This includes its cable routing connections, muting and rechannelizing settings, SMPTE convert settings—everything. It even includes all of the settings for an original MIDI Time Piece connected to the network port.

The MIDI Time Piece II can store eight different setups in its internal, battery-backed memory. They are remembered by the MIDI Time Piece II for the life of the internal battery. Each setup can be entirely different from the others. The eight setups can be edited and saved from the front panel LCD or from the MTP II Console software.

One of the eight base setups is always active. Whenever you make a change to one of the MIDI Time Piece II’s settings, the change is added to the current setup. To see which setup is the current one, turn the WINDOW knob all the way to the left; the setup name appears in the LCD.

Most of the time, you will probably have one basic studio setup. In addition, you may have perhaps one, two, or three other base setups for various situations (a basic live gig setup, for example). The MIDI Time Piece II provides you with eight such base setups. If you need more, don't worry. That's where modifiers (defined in the next section) come in. The sections that follow describe how you can tailor a base setup to your needs.

Once a setup has been named and saved, it can be recalled instantly in one of the following ways:

- with the knobs on the front panel
- with the Setups & Modifiers window or Patch List window in MTP II Console
- with a MIDI patch change sent to the MIDI Time Piece II from a controller or other device connected to the network

What is a modifier?

A modifier is any set of commands that you can issue to the MIDI Time Piece. It could be just one command, such as "Connect MIDI IN cable 5 to MIDI OUT cable 3" or "Map K2000 input ch. 4 to ch. 6".

A modifier, however, can be more than that just one command. It could, for example, consist of several commands saved together. For example, you could create a modifier that connects a keyboard controller to two sound modules, connects a drum pad controller to a sampler, and mutes real time data on input cable 3, all at once.

As another example, a modifier can be a set of commands that sets up one of the front panel knobs to send MIDI volume controllers to all MIDI outputs.

The MIDI Time Piece II can store up to 127 modifiers, depending on how large each one is, in its internal, battery-backed memory. Like setups, modifiers are remembered by the MIDI Time Piece II for the life of the internal battery. Modifiers can be created, edited, and saved from the MTP II Console software.

Modifiers can be recalled instantly in the same manner as setups with the front panel LCD, the Setups & Modifiers window, the Patch List window, or with a MIDI patch change event sent to the MIDI Time Piece II from any device (or software) connected to the network.

Modifiers can be recalled instantly in the same manner as setups with the front panel LCD, the Setups & Modifiers window, the Patch List window, or with a MIDI patch change event sent to the MIDI Time Piece II from any device (or software) connected to the network.

The Setups & Modifiers window is where you configure your eight base setups and where you create modifiers.

Using the Setups & Modifiers window

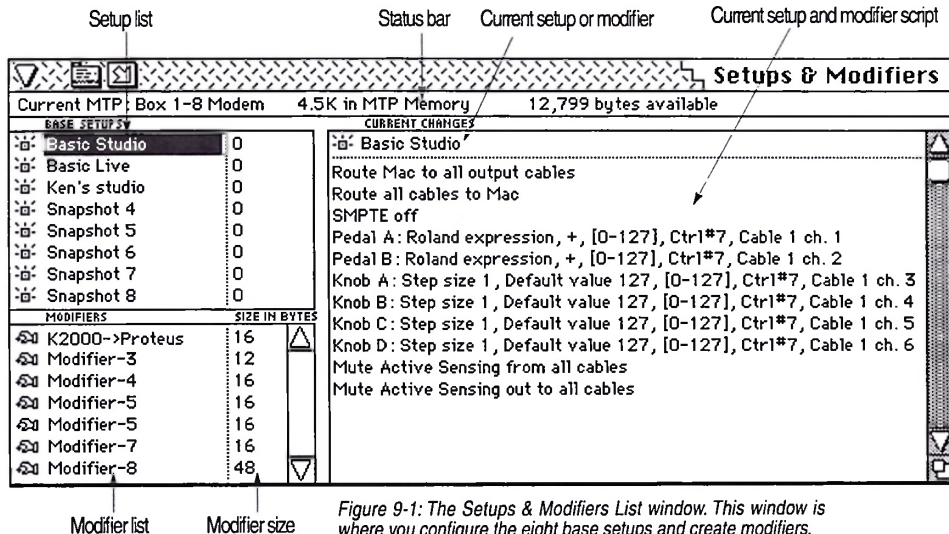


Figure 9-1: The Setups & Modifiers List window. This window is where you configure the eight base setups and create modifiers.

Creating a setup

Since the MIDI Time Piece II ships with eight base setups already built in, you don't actually create one from scratch. Instead, you modify one of the existing eight setups. See the following sections for how to do so.

Naming a setup or modifier

To name a setup or modifier:

1. Click the name to pop-edit it.
2. Type the desired name.
3. Press return.

Recalling setups and modifiers

To call up a setup or modifier, click its icon in the setup or modifier list in the left-hand side of the window.

Using the script

When you click a modifier or setup icon, its command script appears in the scrolling list on the right, and it gets called up inside the MIDI Time Piece II.

Only one base setup can be current at a time. But as many modifiers as you like can be recalled on top of the current setup.

When you recall a modifier, any commands that it contains override the current setup. Everything else about the current setup remains the same.

When you recall a setup, it completely replaces the current setup and clears away any current modifiers.

The current setup or modifier *script* (as shown in Figure 9-1 on page 79) is a scrolling list of commands that make up that setup or modifier. Each command is a description of a specific setting in the MIDI Time Piece II. The modifier or setup name appears at the top of the list.

The script allows you to see everything that's going on in the MIDI Time Piece II at the moment. If you make a change (by doing something in one of the other windows), the change will appear at the bottom of the script.

The script is an itemization of every command that makes up the setup or modifier.

Italicized items in the script are commands that have been made but that have not yet been saved as part of a setup or modifier. See the next section for how to do so.

Adding one or more commands to a setup or modifier

To add a command to the setup or modifier script:

- 1. Be sure that the modifier or setup you want to edit is currently being displayed in the script list.**

The modifier or setup name appears at the top of the list. If it isn't, click its icon in the setup or modifier list.

Removing a command from a modifier

Sorting the setup and modifier lists

Creating a new modifier

- 3. Repeat step 2 as necessary to add as many commands as you need.**

As you add each new command, it appears at the bottom of the script list. Notice that when it is first added, it is italicized.

- 4. When you have finished adding commands, choose “Save to base setup” or “Save to modifier” in the mini-menu.**

This adds the commands to the setup or modifier.

To remove a command from the modifier script, click it to select it and press the delete key. Alternately, you can choose Cut or Clear from the Edit menu, or you can press command-X.

The mini-menu provides sort commands for the modifier and setup lists.

You can sort setups by name or number.

You can sort modifiers by their name, size (in bytes), or number.

The MIDI Time Piece can store up to 127 modifiers, depending on their size.

There are two ways to create a modifier: one way is to create a new one from scratch and then add commands to it.

The other way is to make the command changes first and then save them as a modifier. See “Saving newly added script commands as a modifier” on page 82.

To create a new modifier from scratch:

- 1. Choose Add Modifier from the mini-menu.**
- 2. A new modifier appears in the modifier list (in the lower left corner of the window).**
- 3. Name the new modifier.**

See “Naming a setup or modifier” on page 79.

Adding new script commands to a setup

Saving newly added script commands as a modifier

Saving changes to a modifier as another modifier

Merging modifiers into a setup

4. Add commands to the new modifier as necessary.

See “Adding one or more commands to a setup or modifier” on page 80.

Any time you add a script command, it is automatically saved to the current setup. Saving occurs when you switch to a different setup or when you quit MTP II Console.

If you want, you can save them manually by choosing the “Save to setup” mini-menu command.

If you don’t want to add new commands to the script, save them as a modifier (see the next section).

As you work, you may add additional commands to the current setup script and then decide that you don’t want them to be part of the setup. Instead, you want to save them separately as a modifier, which can be recalled on its own (with its own patch change, for example).

To save additional commands in the script as a modifier:

1. Choose “Save to modifier” from the mini-menu.

A dialog appears.

2. Choose an existing modifier, or click New Modifier and enter a name for it.

3. Click OK.

If you created a new modifier, it appears at the bottom of the list.

The procedure for this is the same as described above in “Saving newly added script commands as a modifier”.

To merge modifiers into a setup:

1. Select the setup.

2. Select the desired modifiers.

3. Choose Save to setup from the mini-menu.

Clearing all current modifiers

Deleting a modifier

Hints for using setups and modifiers

To clear away modifiers from the current script, reselect the current setup (or select a different one). Doing so replaces all existing modifiers with the newly selected setup.

To delete a modifier from the MIDI Time Piece II memory:

- 1. Click the modifier to select it.**
- 2. Choose "Delete modifier" from the mini-menu.**

Setups and modifiers provide you with efficiency and flexibility in managing the MIDI Time Piece II's internal configuration within the confines of its internal RAM.

Think of a setup as a base of operations for any given situation. Modifiers can then be recalled and removed as needed to make changes to the base setup.

For example, let's say that you use the MIDI Time Piece II in live performance, and you use its routing capabilities to create connections from your controller synth to other synths in your live rig. Let's also say that you have different routings for each song in your set.

In this situation, you should create a basic live performance setup that meets basic requirements that don't change during the performance, such as data muting and SMPTE settings.

Then, create one modifier for each change to the MIDI Time Piece II that you need to make during the performance. For example, you could create different cable routing modifiers which set up the MIDI Time Piece II the way you need for each song. You can then call up that modifier with a MIDI patch change from your controller (see chapter 10, "Using the Patch List Window"), and the MIDI Time Piece II is instantly ready to go with the correct routing.

You can create modifiers for just about anything the MIDI Time Piece II can do, including pedal input settings and knob settings, cable connections, data muting, and channel remapping.

You can create modifiers for just about anything the MIDI Time Piece II can do, including pedal input settings and knob settings, cable connections, data muting, and channel remapping.

Chapter 10 *Using the Patch List Window*

What is a patch?

This chapter explains how to define a patch in the MIDI Time Piece II and recall the patch via the MTP II console, a sequencer, a MIDI device, or the front panel LCD.

You may find it easier to understand this chapter if you read chapter 9, "Building Setups and Modifiers" before reading this chapter.

A patch in the MIDI Time Piece II can consist of one of the following:

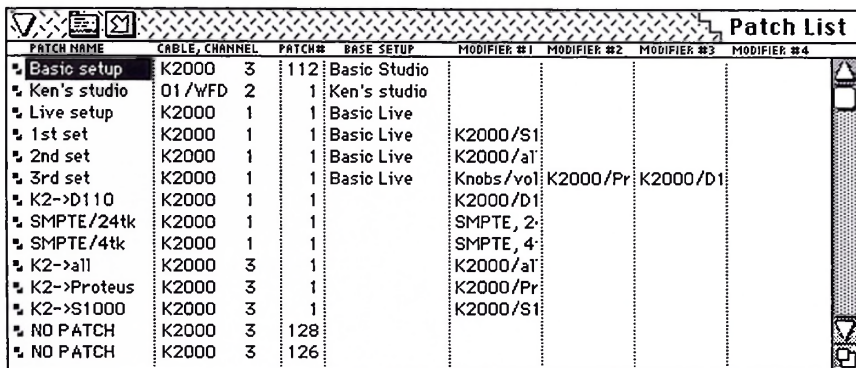
- A single base setup
- A single modifier
- A base setup accompanied by one to four modifiers
- A group of two, three, or four modifiers

The MIDI Time Piece II can store up to 127 patches.

Each patch is assigned to a MIDI patch change number between zero and 127. You can then recall the patch by sending a MIDI patch change event to the MIDI Time Piece II via any MIDI device or software that can send MIDI patch change events. In addition, each patch can be assigned its own receive cable and channel, so that you can call up patches from several different controllers.

Creating a patch in the Patch List window

The patch List window lets you build patches from the base setups and modifiers that you have created in the Setups & Modifiers window.



PATCH NAME	CABLE, CHANNEL	PATCH#	BASE SETUP	MODIFIER #1	MODIFIER #2	MODIFIER #3	MODIFIER #4
Basic setup	K2000	3	112 Basic Studio				
Ken's studio	01 /WFD	2	1 Ken's studio				
Live setup	K2000	1	1 Basic Live				
1st set	K2000	1	1 Basic Live	K2000/S1			
2nd set	K2000	1	1 Basic Live	K2000/a1			
3rd set	K2000	1	1 Basic Live	Knobs/vol	K2000/Pr	K2000/D1	
K2->D1 10	K2000	1	1	K2000/D1			
SMPTE/24tk	K2000	1	1	SMPTE, 2			
SMPTE/4tk	K2000	1	1	SMPTE, 4			
K2->all	K2000	3	1	K2000/a1			
K2->Proteus	K2000	3	1	K2000/Pr			
K2->S1000	K2000	3	1	K2000/S1			
NO PATCH	K2000	3	128				
NO PATCH	K2000	3	126				

Figure 10-1: The Patch List window.

To build a patch:

1. Name the patch.

To do so, click the patch name in the left-most column to pop-edit it. Type in the desired name, and press return, or press the down or up arrow key to pop-edit the next or previous name.

2. Choose a cable and channel for the patch by selecting them from the cable and channel pop-up menus as shown in Figure 10-2.

Click in the cable column next to the name of the patch to open the pop-up menu. This is the cable and channel that the MIDI Time Piece II will monitor for the patch change event that calls up the patch. If you want to receive the patch change from any cable, choose the All option in the list. Notice also that you can choose to receive the patch change from the computer (*Mac port* option) or any device connected to the network port (*Network port*

option). If you would like to be able to receive the patch change from any channel, select the *Any* option in the list. If you want to completely disable the patch, choose *None*.

PATCH NAME	ANY	PATCH#
Basic setup	K2000	112
Ken's studio	01/WFD	11
Live setup	Drumkat	11
1st set	D-110	11
2nd set	TG77	11
3rd set	S1000	11
K2->D110	Proteus	1
SMPTE/24tk	R-8	1
SMPTE/4tk	Cable 9	1
K2->all	Cable 10	1
K2->Proteus	Cable 11	1
K2->S1000	Cable 12	1
NO PATCH	Cable 13	128
NO PATCH	Cable 14	126
	Cable 15	
	Cable 16	
	Mac port	
	Network port	

Figure 10-2: The cable pop-up menu.

3. Type in a patch number.

You can enter any patch number between zero and 127.

PATCH NAME	CABLE, CHANNEL	PATCH#	BASE SETUP
Basic setup	K2000 3	112	
Ken's studio	01/WFD 2		

- If desired, choose a base setup from the base setup pop-up menu as shown below in Figure 10-3.

Remember, a patch does not require a base setup. See “What is a patch?” on page 85.

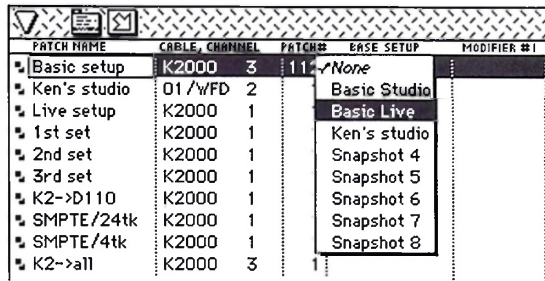


Figure 10-3: Assigning a base setup to a patch. Note: a patch does not require a base setup.

- If desired, choose one or more modifiers from the four modifier pop-up menus.

A patch can have up to four modifiers, and each modifier can have any number of commands in it.

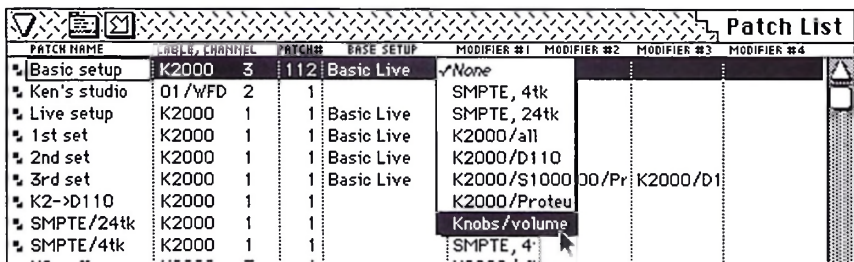


Figure 10-4: Assigning modifiers to a patch. A patch can have up to four modifiers assigned to it.

Sorting the patch list

Each patch has a move handle icon just to the left of its name. Drag the handle to move the patch up or down in the list.

The patch list window mini-menu provides several different ways to sort the patches in the list automatically. You can view them:

Recalling patches from the patch list window

Recalling patches via a MIDI patch change

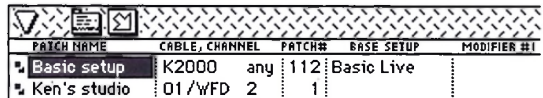
Making the cable and channel assignment to several patches at once

- Alphabetically by name
- Sequentially by patch number
- Sequentially by patch change number
- Sequentially by cable and channel assignment

☛ Note: if you have re-ordered the patches by dragging their move handles in the list, you'll lose your manual sorting if you use one of the above automatic sorting options.

To recall a patch from the patch list window, click the patch icon to the left of the name.

To recall a patch via a MIDI patch change, send the appropriate MIDI patch change event from the appropriate cable and channel. For example, to recall the Basic setup patch highlighted below, you would need to send the MIDI Time Piece II patch change number 112 from any channel on the Kurzweil K2000.



PATCH NAME	CABLE, CHANNEL	PATCH#	BASE SETUP	MODIFIER #
Basic setup	K2000 any	112	Basic Live	
Ken's studio	01 /WFD 2	1		

You can assign more than one patch to the same patch number; however, if two or more patches have the same patch number, and they also have the same receive cable and channel, only one of them will be recalled when the patch is sent. If you want to achieve their combined effect, combine them into one modifier.

Only use the same patch number when you will be receiving that patch from different inputs.

To assign more than one patch to the same cable and channel:

1. Select the patches you want to assign.

Shift-click the icon of non-adjacent patches. Shift drag to select adjacent ones. To select all, choose Select All from the Edit menu or press command-A.

2. Choose “Assign cable & channel” from the mini-menu.

A dialog box appears.

3. Select the desired cable and channel.

4. Click OK.

Chapter 11 *Working With Files*

MTP II Console lets you save the entire contents of the MIDI Time Piece II's memory, including base setups, modifiers, and patches as a file on disk. The file can be later be opened and modified at any time. This allows you to store an unlimited number of MIDI Time Piece II setups.

Creating a new file

To create a new file, just open MTP II Console:

- 1. Double-click on the MTP II Console program icon.**

You can also click once on the MTP II Console icon and choose Open from the File menu.

When you open MTP II Console, it loads the entire contents of the MIDI Time Piece II memory into the computer. It is stored in RAM until you save it as a file (discussed later in the chapter).

Opening an existing file

To open an existing file:

- 1. Double-click on the file icon.**

You can also click once on the file and choose Open from the File menu. This will start MTP II Console and bring up the selected file.

To open an existing file from within MTP II Console:

- 1. If a file is already open, close it by selecting Close from the File menu.**

You are given the option of saving changes in this file.

Saving files

2. Select Open from the File menu.

A dialog box appears containing a list of files on the selected disk. To see the files on a disk in a different drive, click the Desktop button (or Drive button in System 7). To view files on another disk which is not currently in a drive, click on the Eject button and insert the other disk.

3. Click on the name of the file you wish to open.

4. Click on the Open button.

The file you selected will be opened. Double-clicking on the name of the file will also open the file.

Please read this section carefully! When you open a file from a disk, MTP II Console makes a copy of that file and puts it in the Macintosh's temporary memory (called Random Access Memory, or RAM). When you work with the file, you are actually working with the copy that is in RAM, not the original file on the disk. If you choose *Save* from the File menu, MTP II Console writes the changes you have made into the original file on the disk. If you do not save, the changes you have made are never written to the disk. For example, if you quit without saving changes, the work you have done is not saved on the disk and is permanently deleted from the computer's memory.

This is why files should be saved frequently. If MTP II Console or your Macintosh should malfunction, all of the work you have accomplished since you last saved may be lost (although you can get it back from the MIDI Time Piece II itself). However, if the file was recently saved, you can retrieve the latest version from the disk and proceed without having lost much work.

Always be sure that the disk you are saving the file on has enough room! Files can be saved to any disk with sufficient space for the file. They can also be saved with different names.

Saving a file under a different name

Saving a file to a disk not currently in a drive

Here's the basic procedure to save a file:

1. Choose the Save command from the File menu.

Your file is saved on the disk in its current state, replacing the old version with the same name. If you want to keep the old version, use the Save As command on the File menu (see below) instead to save the current version under a different name. If you are saving the file for the first time, a dialog box will appear prompting you for a name.

2. Type in the name of your file.

You can't use a colon in the name; all other characters are permitted, including spaces. If you enter a name that is already in use, a dialog box will ask you to confirm your choice.

3. Click on the Save button.

Pressing the Return key will do the same as clicking on the Save button. If you want to save the file to a different disk, click on the Eject button, insert a new disk and, after typing in the name, press the Save button. Pressing Cancel withdraws the Save command.

The Save As command is used to save a file under a different name or to a different disk:

1. Choose Save As from the File menu.

The Save As dialog box will appear.

2. Type in the new name for the file.

You can't use a colon in the name; all other characters are permitted, including spaces. If you enter a name that is already in use, a dialog box will ask you to confirm your choice.

3. Click on the Save button.

Your file is saved on the disk in its current state under the new name.

To save a file to a disk not currently in a drive:

1. Choose the Save As command from the File menu.

Reverting to a previously saved version of the file

2. The Save As dialog box will appear.

3. Click on Eject.

The disk that is currently displayed in the dialog box window will be ejected. If you want to use the other drive, click on Drive before clicking on Eject.

4. Insert the disk you wish to save the file on.

5. Click on the Save button.

The file is saved on the disk you selected.

If you've made unwanted changes to a file, you can undo the changes you've made by returning to the last saved version. This operation is identical to closing the file and opening it from the disk again.

1. Choose Revert to Saved from the File menu.

A dialog box asks you to confirm this choice.

2. Click on OK to confirm the action, Cancel to withdraw it.

Reverting to the last saved version of the file means that all changes you've made since you opened or last saved the file will be lost.

Reverting to a previously saved version is useful when experimenting with a file. You can quickly remove any changes by using this command. Make sure that you save the file in the state you want it before beginning to experiment.

Quitting MTP II Console

Quitting MTP II Console returns you to the Macintosh desktop.

■ Choose *Quit* from the File menu.

A dialog box may appear asking you if you want to save changes made to the file. To save the changes, press Yes. If you don't want to save changes, press No. To withdraw the Quit command and return to your MTP II Console file, press Cancel.

Chapter 12 *Using the MIDI Time Piece II Front Panel Controls*

About this chapter

This chapter explains how to program the MIDI Time Piece II from the front panel. It also explains what the PANIC button does, and how to restore the factory default settings in the MIDI Time Piece II.

Using the LCD

The MIDI Time Piece II front panel liquid crystal display (LCD) is a 2 by 16 character, back-lit display.

With the LCD and four front panel knobs and the Enter button, you can control just about every capability in the MIDI Time Piece II. (If you're curious, see "A few things the LCD can't do..." on page 118.)

- ☛ Please note: changes that you make to the MIDI Time Piece II in the LCD do not automatically get reflected in the MTP II Console software. If you have made changes using the LCD, and you want the software to reflect those changes, choose Verify Network from the Utilities menu MTP II Console or click Status in the Network Configuration window.

Understanding the LCD window structure

The LCD provides 11 windows that are organized around its primary features. These windows are displayed across the top of Figure 12-1 on page 96. Several windows have sub-windows with additional parameters, which are shown below each main window.

- ☛ Note: if you have an original MIDI Time Piece connected to the network port of the MIDI Time Piece II, an additional, 12th window is added in the LCD between the BASE SETUP and the PATCH SELECT windows.

MIDI TIME PIECE II LCD WINDOW STRUCTURE

(continued on opposite page) →

BASE SETUP	IMPORT/ EXPORT MTP1 (Only appears with MTP 1)	PATCH SELECT	GLOBAL HARDWARE SETUP	MIDI DATA DUMP	SMPTE CONTROLS
MODIFIER		USE BASE SETUP	MAC SPEED		SMPTE CONVERT (MTC, DTL, NONE)
		USE MODIFIER (1 THRU 4)	NETWORK CONNECT- ION & BOX ID		SMPTE VOLUME OUT
		TRIGGER	LCD CONTRAST		SMPTE FRAME RATE (24, 25, 30, DROP)
		PATCH NAME/ SAVE	RUNNING STATUS		SMPTE DES- TINATION (MAC, etc.)
			DIRECT CONNECT MODE		STRIPE START
			RESET ALL DATA		JAM SMPTE FRAMES

(continued on opposite page) →

Figure 12-1: The MIDI Time Piece II window structure. The twelve main windows are displayed across the top in the double-ruled boxes. Use the WINDOW knob to scroll horizontally through the top row of main windows. Use the CURSOR knob to scroll vertically through the sub-windows listed below each main window.

← (continued from opposite page)

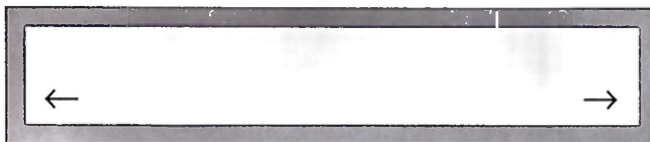
PEDALS	KNOBS	MIDI ROUTING	MUTE MIDI DATA	MIDI CHANNEL MAP	BASE SETUP NAME
PEDAL TYPE	KNOB START/STEP SIZE	ROUTING BY CABLE	MUTING PARAMETERS	INPUT CHANNEL REMAP	WRITE OVER
POLARITY OR THRESHOLD & DECAY	RANGE	ROUTING BY CHANNEL		OUTPUT CHANNEL REMAP	
RANGE OR CLICK TO MIDI OUTPUT	DATA ASSIGNMENT & OUTPUT ASSIGNMENT				
OUTPUT ASSIGNMENT					

← (continued from opposite page)

Getting familiar with the LCD conventions

Here are several conventions that will help you navigate through the LCD display:

- Left and right arrows indicate that there is another screenful of data to the left or right that relates to the current window.



- “Y/N” means to press the YES/NO button to confirm or execute something you have just done in the LCD.
- “<E>” means to press the ENTER button to confirm or carry out something you have just done in the LCD.
- “N” or “Y” means to press the YES/NO button to toggle something from N to Y or Y to N. “Y” means “on” or “enabled” and “N” means “off” or “disabled”.
- When choosing a base setup, modifier, or patch, “N” means that the base setup or modifier has not been called up. (Press the YES/NO button to recall it.) “Y” means that the modifier, base setup or patch has been called up. In this case, disable the modifier, base setup, or patch by enabling a different one.
- When selecting cables in the LCD, the cable range can either be 1-8 or 1-16 if you have two MIDI Time Pieces. “MAC” or “M” stands for the Macintosh (computer port), “NET” or “N” stands for the network port, and “mac” or “m” stands for the computer port on a MIDI Time Piece that you have networked to the one you are working with.
- If you find yourself in window that asks you to save settings that you have made, and you do not want to save the changes, turn the WINDOW knob to exit the window and cancel the operation.

Using the knobs to control the LCD

When the LCD and software conflict

Working with base setups

Here is how the four knobs control the LCD:

- Use the WINDOW knob to select a main window. LCD has eleven main windows that correspond to the MIDI Time Piece II's primary capabilities.
- Use the CURSOR knob to select variables within each window. A variable is a numeric or text item that flashes when it is selected. When selected, you can change it with the VALUE knob.
- Use the VALUE knob to change the currently flashing numeric or text item in the LCD.
- Sometimes the LCD has *two* flashing variables. In this case, one of them is underlined. Use the SELECT knob to change a flashing, underlined variable.

If you've been using the MTP II Console software on the computer to edit the MIDI Time Piece II, the LCD may not be able to accurately reflect the changes you have made from the software because the software can do things that the LCD cannot. For example, you can program a knob to send system exclusive data from the software, but this is not possible from the LCD. If there is any doubt, check the software since it can accurately reflect everything about the MIDI Time Piece II.

For a complete definition of base setups, see "What is a "base setup"?" on page 77 before reading this section.

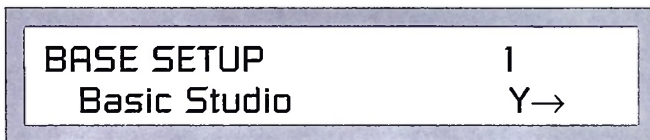
Think of a base setup as a picture of all the MIDI Time Piece II's current internal settings saved all at once. This includes its cable routing connections, muting and rechannelizing settings, SMPTE convert settings—everything.

The MIDI Time Piece II has eight internal base setups; each can store its own unique settings. One of the eight base setups is always active, and its name and number are displayed in the BASE SETUP window. Any changes you make in any of the LCD windows are remembered until you switch to a different base setup. At any time, you can add changes you've made to the current base setup. Or, you can save the

Selecting the current base setup

current base setup, along with the changes, as a different base setup that replaces one of the eight. (See “Making changes to a base setup” on page 100.)

The BASE SETUP window lets you call up one of the MIDI Time Piece II’s eight internal base setups.



To select a base setup:

- 1. Use the WINDOW knob to go to the BASE SETUP window.**
- 2. Turn the VALUE knob until you see the name and number of the desired base setup.**
- 3. Once you selected the desired base setup, press the YES/NO button to recall it.**

Notice that only one base setup can be called up at a time.

To make changes to a base setup:

- 1. Select the base setup as described in the previous section.**
- 2. Make any changes you like to the base setup by using any other windows in the LCD.**

You can select modifiers, change cable routings, or anything you want.

- 3. Use the WINDOW knob to go to the BASE SETUP NAME window.**

It's the window farthest clockwise.

- 4. If desired, use the VALUE and CURSOR knobs to edit the base setup name.**

Making changes to a base setup

5. Press the ENTER button.

You'll now see the following window.



6. Make sure that the original base setup appears in the LCD.

If not, use the VALUE knob to select it. This is because you are going to replace the original base setup. (Although, if you want, you can preserve the original by writing over a different base setup.)

7. When you have selected the base setup you want to replace, press the YES/NO button.

The new base setup replaces the old one.

Use the same procedure as “Making changes to a base setup” on page 100 to rename a base setup.

For a complete definition of a modifier, see “What is a modifier?” on page 78.

A modifier is any command, or set of commands, that you can program the MIDI Time Piece II to do. For example, a modifier could be the command to “connect input cable 3 to output cable 5”.

Modifiers cannot be created or edited in the LCD. They can, however, be called up in the LCD.

The MODIFIER window lets you call up a modifier that you have created with the MTP II Console software.

To select a modifier:

1. Use the WINDOW knob to get to the BASE SETUP window.

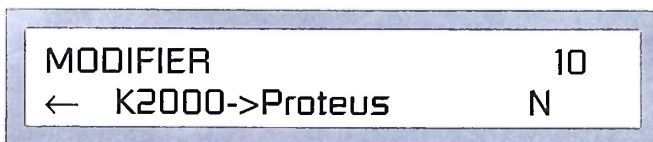
Changing the name of a base setup

Working with modifiers

Calling up a modifier

Building a patch

2. Use the CURSOR knob to get to the MODIFIER window.



3. Turn the VALUE knob until you see the name and number of the desired modifier.
4. Once you selected the desired modifier, press the YES/NO button to recall it.

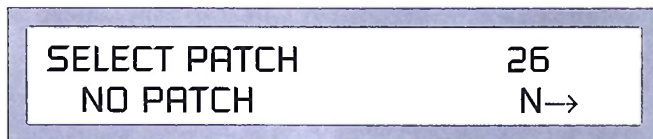
You can recall as many modifiers at a time as you want.

For a definition of a patch, see “What is a patch?” on page 85.

A patch is built using the base setups and modifiers that are stored in the MIDI Time Piece II's memory.

To build a patch from the LCD:

1. Use the WINDOW knob to go to the SELECT PATCH window.



2. Turn the CURSOR knob one click to the right to the USE BASE SETUP window.



3. Use the VALUE knob to select the one of the eight base setups or NONE (no base setup).

4. Turn the **CURSOR** knob one click to the right to the **USE MODIFIER** window.

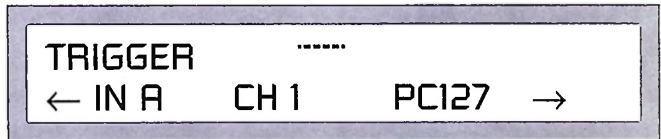


5. Use the **VALUE** knob to select a desired modifier or to select **NONE**.

You can assign up to four modifiers to the patch. To assign a second, third and fourth modifier, use the **SELECT** knob and **VALUE** knob for each one.

6. Turn the **CURSOR** knob one click to the right to the **TRIGGER** window.

The trigger is the MIDI patch change event that will call up the patch. You define what patch change, as well as what cable and channel it will come from in the network. This window provides three parameters, which can be selected with the **CURSOR** knob: the MIDI channel (**CH**), the patch change number (**PC**), and the source cable (**IN**).



7. Use the **CURSOR** and **VALUE** knob to set the trigger parameters as desired.

8. Turn the **CURSOR** knob one more click to the right.

The name patch window appears. Use the **CURSOR** and **VALUE** knobs to adjust the name as desired.

9. Press the **ENTER** button to save the patch settings and name.

To select a patch:

1. Use the **WINDOW** button to go to the **SELECT PATCH** window.

Selecting a patch

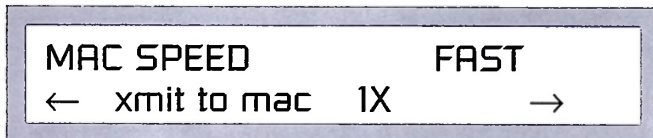
Making the global hardware settings

2. Use the value knob to select the desired patch.

3. Press the YES/NO button to call up the patch.

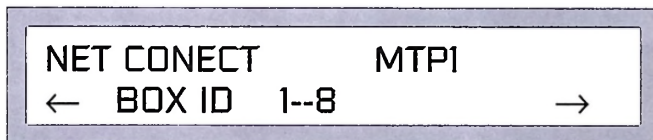
Go to the GLOBAL HARDWARE window using the WINDOW knob. Make the global hardware settings with the CURSOR and VALUE knobs as follows:

MAC SPEED



Your choices here are 1 MHz or FAST. Choose the speed that matches the MIDI software you are running on the Macintosh. For a complete explanation, see "Using "FAST/1X" mode" on page 20.

NETWORK CONNECTION AND BOX ID



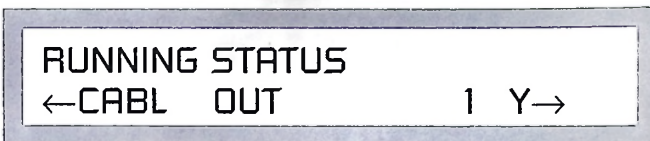
NET CONECT is used to describe what is connected to the network port. Choices for BOX ID are 1-8 or 9-16. See "Making the network settings on the MTP II" on page 26 for detailed information about these settings.

LCD CONTRAST



Use the VALUE knob to change the LCD contrast.

RUNNING STATUS



By default, the MIDI Time Piece II uses running status on its output cables as prescribed by the MIDI specification. Running status is a method of data transmission that uses less data, thereby conserving effort on the part of the MIDI Time Piece II and the receiving device.

Defeating running status solves problems with devices that do not support it, such as the JL Cooper FaderMaster and Emu Emulator II pitch bend. Running Status is about 25% more efficient than non-running status, so don't defeat it unless you have to. If you are not sure whether a MIDI device uses running status, and you encounter strange problems such as stuck notes, try disabling running status on the output cable to the device.

Use the VALUE knob to select the cable and the YES/NO button to disable (or enable) running status.

DIRECT CONNECT



Direct connect is a special mode that allows non-standard MIDI data transmission between a MIDI device and the Macintosh. In this mode, all cable merging is disabled. You may need to use Direct Connect mode with hardware that does not conform to standard practices. For example, some samplers require Direct Connect mode in order to perform sample dump transfers to and from the Mac. If you have difficulty with sysex transfers, try Direct Connect mode.

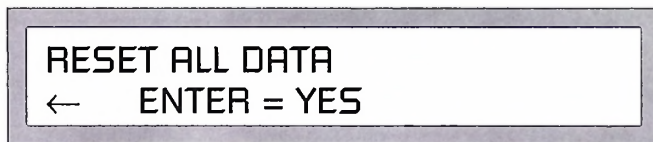
- Note: the MIDI device must be connected to a MIDI IN and a MIDI OUT with the same number.

Use the VALUE knob to select the cable that the device is connected to.

- ☛ Important note: when the MIDI Time Piece II is in Direct Connect mode, it cannot receive or send data from any other ports except the direct connect ports.

Direct Connect mode can only be turned on and off with the front panel LCD.

RESET ALL DATA



This window resets the MIDI Time Piece II to its factory default settings.

- ☛ BEWARE! When you reset all data, you lose everything in memory, including all modifiers and any modifications you have made to the base setups.

Performing a MIDI data dump

The DATA DUMP window (selected with the WINDOW knob) causes the MIDI Time Piece II to transmit several system exclusive messages to the computer and to output cable 8. These messages contain a description of the current state of the MIDI Time Piece II at the time of the bulk dump (not including modifiers and base setups other than the current base setup).

To initiate the bulk dump, press ENTER.

Receiving a MIDI data dump

To get the MIDI Time Piece II to receive a MIDI data dump, transmit the data dump from software running on the Mac, or transmit it from a sequencer or other device connected to MIDI IN number 8. The MIDI Time Piece II is ready to receive the dump at all times; no special preparation is needed. The data dumps must be received from either the computer port, the network port, or MIDI IN cable 8.

Using the SMPTE controls

Use the WINDOW knob to go to the SMPTE window. Make the SMPTE settings with the CURSOR and VALUE knobs as follows:

SMPTE CONVERT



This window lets you choose what SMPTE time code will be converted to with the VALUE knob: MIDI time code (MTC) or direct time lock (DTL). If you don't want it to convert, choose NO CONVERT. The "LTC" stands for *Longitudinal Time Code*. If you are curious, see "Two forms of SMPTE: LTC versus VITC" on page 151.

SMPTE VOLUME OUT



Use the VALUE knob to increase or decrease the audio level of SMPTE output.

- Note: this display in the LCD provides a higher degree of resolution than the MTP II Console software when adjusting the SMPTE output level. If you need to fine-tune the level, use the LCD instead of the software.

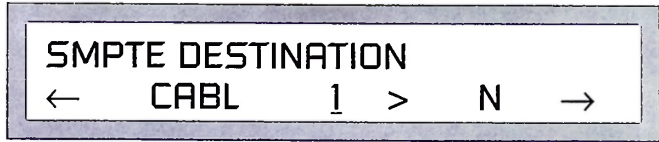
SMPTE FRAME RATE WHEN STRIPE



Use the VALUE knob to select the frame rate for striping.

- Note: the MIDI Time Piece II does not support the 29.97 time base. When striping 30 fps or drop frame, it runs at 30 fps.


SMPTE DESTINATION



SMPTE DESTINATION
← CABL 1 > N →

This window determines where the MIDI Time Piece II sends MIDI Time Code or Direct Time Lock when it is converting or generating time code. By default, it sends time code to the computer only. To send time code to another cable, use the SELECT knob to choose the cable and use the VALUE knob to enable time code (Y) or disable it (N).

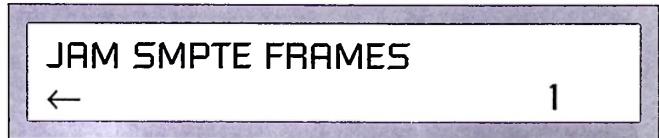
STRIPE START



STRIPE START
← 00:00:00 N →

Use the CURSOR AND VALUE knobs to set the start frame for striping. Press the YES/NO button to start striping (Y). Press it again to stop striping (N). The start time is expressed in hours, minutes, and seconds. It always starts at zero frames.

JAM SMPTE FRAMES



JAM SMPTE FRAMES
← 1

Use the VALUE knob to increase or decrease the number of frames the MIDI Time Piece II will "jam sync" or "freewheel" for in order to bypass drop outs in the time code. Choices are 0, 1, 2, 4, 8, 16, and 32 frames or "I". Choose "I" for "infinite" jam sync, which causes the MIDI Time Piece II to begin striping on its own when it encounters a drop out. To stop striping in this case, use the CURSOR knob to go back to the STRIPE START window and press ENTER.

Getting a running update of SMPTE in the LCD

Programming the pedal inputs

While the MIDI Time Piece II is either converting or generating SMPTE time code, use the WINDOW knob to go to the SMPTE window. The SMPTE window provides a running update (hours:minutes:seconds) of the time code.

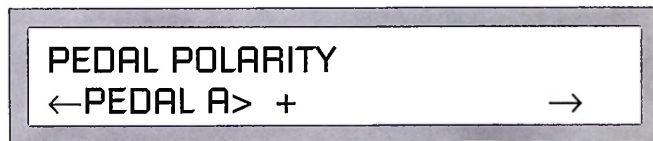
Use the WINDOW knob to go to the PEDALS window. Make the PEDAL settings with the CURSOR and VALUE knobs as follows:

PEDAL TYPE



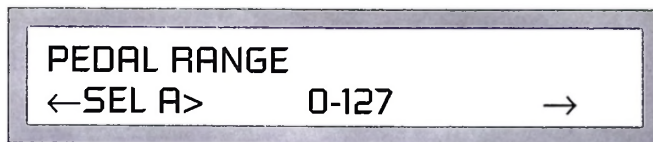
Use the SELECT knob to choose between pedal A and pedal B. Use the VALUE knob to choose a type of pedal. You have five choices: Roland expression, Korg expression, click-to-MIDI (pedal A only), momentary (for a foot switch), and OFF. If you are not sure whether your pedal is a Korg type or Roland type, choose one and then see “Verifying that the pedal is working” on page 111.

PEDAL POLARITY



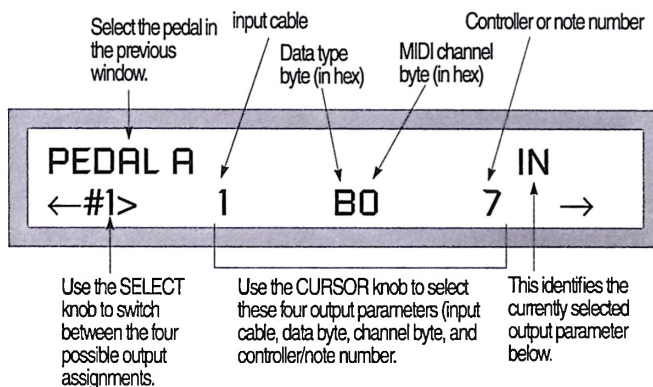
Use the SELECT knob to choose between pedal A and pedal B. Use the VALUE knob to choose between positive (+) and negative (-) polarity. Negative polarity reverses the direction of the pedal, so that if it normally goes up when you press down, negative polarity will make it go down (and vice versa). If you aren't sure which to choose, use positive and then check it by going to “Verifying that the pedal is working” on page 111.

PEDAL RANGE



Use the SELECT knob to choose between pedal A and pedal B. Use the CURSOR knob to select the low and high end of the range. Use the VALUE knob to set the numbers. This is the minimum and maximum value that the pedal will generate.

PEDAL OUTPUT ASSIGNMENT



To select the pedal, use the CURSOR knob to go back to the previous window and use the SELECT knob to select the pedal. In this window, use the SELECT knob to choose among four possible output assignments. Use the CURSOR knob to switch between the four output assignment parameters (input cable, data byte, channel byte, and controller/note number).

- Note: pedal output cannot be assigned directly to an output cable. Instead, it must be assigned to an input cable with which it gets merged. See "Making a pedal or knob output assignment" on page 69.

For the data type byte, enter one of the following values:

To generate this:	Enter this as the data type byte:
Note	9
Polyphonic pressure	A
Controller	B
Program change	C
Mono pressure	D
Pitch bend	E

For the MIDI channel byte, enter the appropriate value below:

Channel:	Hex value:	Channel:	Hex value:
1	0	9	8
2	1	10	9
3	2	11	A
4	3	12	B
5	4	13	C
6	5	14	D
7	6	15	E
8	7	16	F

Verifying that the pedal is working

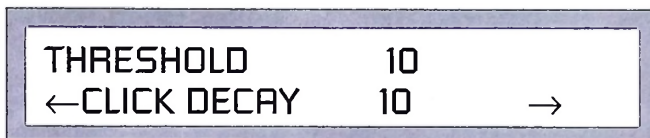
To verify that the pedal you have programmed is working properly, use the WINDOW knob to go to the PEDALS window. Press the pedal and watch the display. You should get a running update in the LCD as the pedal moves. If not, try choose a different pedal type.

Programming Pedal A to convert an audio click

To program Pedal A to convert an audio click:

- 1. Use the WINDOW knob to go to the PEDALS window.**
- 2. Use the CURSOR knob to go to PEDAL TYPE.**
- 3. Use the SELECT knob to choose Pedal A.**
- 4. Use VALUE knob to choose CLICK.**

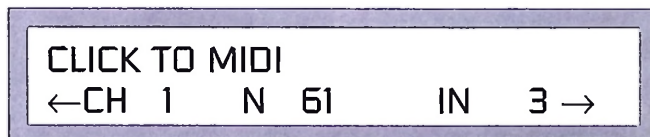
5. Turn the **CURSOR** knob once click to the right to go to the **THRESHOLD/DECAY** window.



6. Use the **CURSOR** and **VALUE** knobs to set the **Threshold** and **Decay**.

The threshold can be set anywhere on a scale from 0 to 70. The audio click must be loud enough to reach the threshold. A soft click will require a low threshold. Try to set the threshold as high as possible, however, to avoid false triggering from noise. Decay is meant to prevent doubled attacks. The decay can be set from 1 to 31. Low values make the decay longer; high values make it shorter. Try to set the decay as long (low) as possible, but if you are working with a faster tempo, don't make it too long or you will miss beats. The decay also determines the duration of the MIDI note generated by the MIDI Time Piece II. A low decay produces a long duration; a high decay produces a short duration. You may need to experiment to adjust these values. See "Checking the click-to-MIDI settings" on page 113.

7. Turn the **CURSOR** knob once click to the right to go to the **CLICK TO MIDI** output assignment window.



8. Use the **CURSOR** and **VALUE** knobs to set the output channel, MIDI note number, and input cable assignment.

- Note: the click-to-MIDI output assignment cannot be assigned directly to an output cable. Instead, it must be assigned to an input cable with which it gets merged. See "Making a pedal or knob output assignment" on page 69.

Checking the click-to-MIDI settings

Programming the knobs to send MIDI data

Use the WINDOW knob to go to the PEDALS window. Play the audio click. Watch the display. You should see the bar indicator flash for every click. You can also observe the green MIDI OUT LED's on the front panel to see if they flash in sync with the click as well. If they miss a beat, or if they seem to flicker or stutter with a doubled attack, try adjusting the threshold and decay.

Use the WINDOW knob to go to the KNOB window. Make the KNOB settings with the SELECT, CURSOR and VALUE knobs as follows:

- 1. Turn the CURSOR knob one click to the right to go to the KNOB START/STEP SIZE window.**
- 2. Use the SELECT and VALUE knobs to set the start value and step size for each knob.**

The start value is the value that the knob gets set to when you first call up the base setup or modifier that stores the knob settings. The step size determines the value change of the controller or patch change messages every time you turn the knob one click. Normally, the value will change by one. You could, however, get a more dramatic change with less turning of the knob by making this value five, for example. Then the knob will generate values of 0, 5, 10, 15, 20, 25, etc. on each click as you turn it.

- 3. Turn the CURSOR knob one click to the right to go to the KNOB RANGE window.**
- 4. Use the SELECT, CURSOR and VALUE knobs to set the range for each knob.**

These values determine the lowest and highest value that the knob can generate.

- 5. Turn the CURSOR knob one click to the right to go to the KNOB output assignment window.**

The knob output assignment window works in the same fashion as the pedal output assignment window described in the section "PEDAL OUTPUT ASSIGNMENT" on page 110. Please refer to that section for details.

Making cable routing connections

- Note: similarly to pedals, knob output cannot be assigned directly to an output cable. Instead, it must be assigned to an input cable with which it gets merged. See "Making a pedal or knob output assignment" on page 69.

Use the WINDOW knob to go to the MIDI ROUTING window. Use the CURSOR, SELECT, and VALUE knobs to make cable routings as follows:

ROUTE BY CABLES



Use the SELECT knob to choose an input cable. Use the VALUE knob to select an output to route the input to. Once you have made your input to output cable choices, press YES/NO to make (or break) the connection. (For cable designations, see "Getting familiar with the LCD conventions" on page 98.)

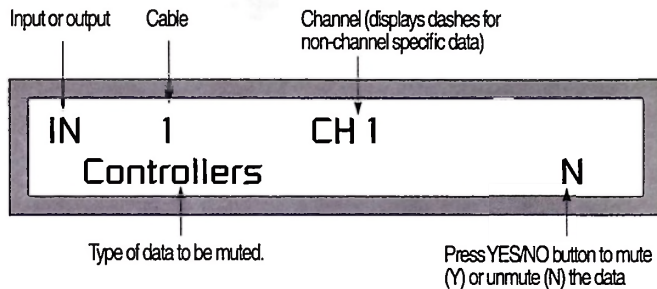
ROUTE BY CHANNEL



Use the SELECT knob to choose an input cable. Use the CURSOR and VALUE knobs to select the input cable and channel that you want to route to an output cable. (The input and output channel are the same.) Once you have made your input to output cable choices, press YES/NO to make (or break) the connection. (For cable designations, see "Getting familiar with the LCD conventions" on page 98.)

Muting MIDI data

Use the WINDOW knob to go to the MUTE MIDI DATA window. Make the muting settings with the CURSOR and VALUE knobs as follows:



Rechannelizing MIDI data on input or output

Use the WINDOW knob to go to the MIDI CHANNEL MAP window. Make the mapping settings with the CURSOR and VALUE knobs as follows:

INPUT CHANNEL REMAP



Use the SELECT knob to choose an input cable. Use the CURSOR and VALUE knobs to select the source and destination channels. (For cable designations, see “Getting familiar with the LCD conventions” on page 98.)

OUTPUT CHANNEL REMAP



Use the SELECT knob to choose an output cable. Use the CURSOR and VALUE knobs to select the source and destination channels. (For cable designations, see “Getting familiar with the LCD conventions” on page 98.)

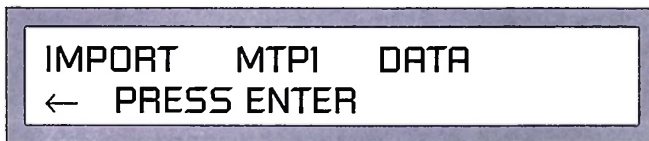
Working with an original MTP

If you have an original MIDI Time Piece connected to the network port of the MIDI Time Piece II, you can control the old MTP cable routing, muting, and rechannelizing from the MIDI Time Piece II.

- Note: before proceeding below, make sure you have identified the MIDI Time Piece on the network as described in “Making the network settings on the MTP II” on page 26.

To control the old MIDI Time Piece from the LCD:

1. Use the WINDOW knob to select the **IMPORT MTP1 DATA** window.



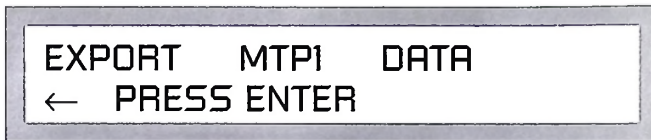
2. Press the ENTER button.

The two boxes perform a handshake, and the word “import” changes to the word “export”.

3. **Make the desired cable routing, muting, and rechannelizing changes you would like to make.**

Remember, the original MIDI Time Piece now serves as box 9-16 in the network, so you’ll be working on cables 9-16 in the LCD. Use the appropriate windows in the LCD to edit the cable routing, muting, and rechannelizing.

4. When you have completed the MTP 1 settings, return to the EXPORT MTP1 DATA window using the WINDOW knob.



5. Press enter.

The changes you made are sent over the network to the MTP.

The MIDI Time Piece II has a Panic button on the front panel.

If the panic is pressed once, it sends out a MIDI All Notes Off message to each cable.

If the panic button is pressed twice (somewhat like a double-click of a computer mouse), it not only sends out All Notes Off messages, it also sends out a MIDI note off command for every note on every channel. As you can imagine, this is a lot of data, and it takes the MIDI Time Piece II a moment to transmit all of it!

The 'factory default' settings are the settings that the MIDI Time Piece II has when it ships from the factory. At times, you might need to start from a "clean slate", so to speak, and restore the factory default settings. To restore the factory default settings:

1. Use the WINDOW knob to go to the GLOBAL HARDWARE SETUP window.
2. Use the turn the CURSOR knob all the way clockwise.

The RESET ALL DATA window appears.

3. Press the ENTER button.

- BEWARE! You'll lose everything in the MIDI Time Piece II memory, including modifiers and patches that you have created and saved, and changes you have made to any of the eight base setups.

Using the Panic button

Restoring factory default settings

Calibrating the click input

The click input (Pedal A) is calibrated before the unit leaves the factory. However, this calibration can be lost in some circumstances.

To recalibrate the click input:

- 1. Insert the audio source into the Pedal A.**
- 2. Configure Pedal A for click to MIDI conversion as described in “Programming Pedal A to convert an audio click” on page 111.**
- 3. Go to the THRESHOLD window using the CURSOR knob.**
- 4. With silence on the audio click input (no click being played), press ENTER in threshold window.**

This recalibrates the click input. In doing so, the threshold bottoms out at approximately 2 or 3 in a range from 0 to 70.

A few things the LCD can't do...

There are a handful of things that cannot be programmed from the front panel. You cannot:

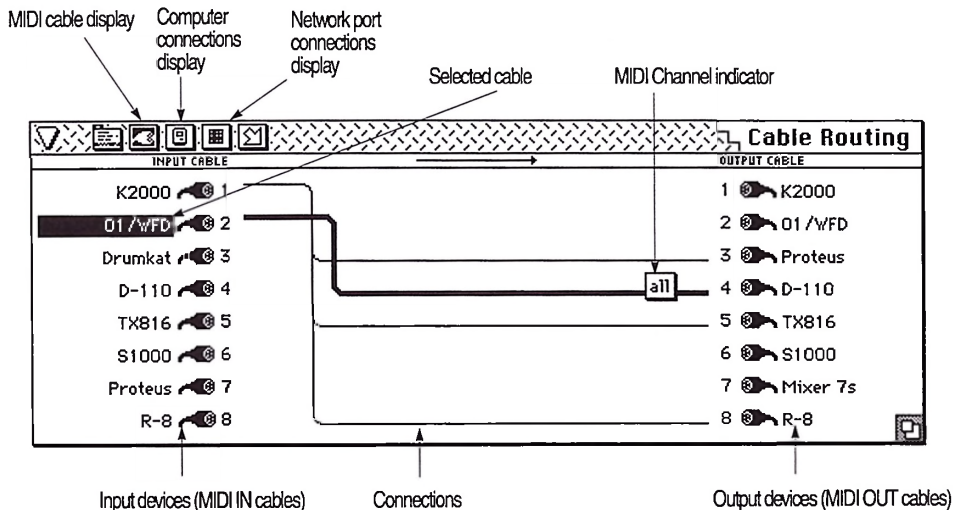
- Program a knob to send system exclusive data (You can program it to send controller data, however.)
- Create or edit modifiers
- Use the “mute only” or “Mute all except ___” muting options for controllers

These tasks can be accomplished with the MTP II Console software.

Chapter 13 *MTP II Software Quick Reference*

Cable Routing window

The Cable Routing window lets you connect anything in the MIDI Time Piece Network to anything else in the network, including the computer, a second computer, and additional MIDI interfaces.



MIDI Cable Display: when this button is highlighted, the window shows connections between MIDI devices in the network.

Computer connections display: when this button is highlighted, the window shows connections between all the MIDI devices in the network and the computer.

Network port connections display: when this button is highlighted, the window shows connections between MIDI devices and whatever is connected to the network port.

Input devices (MIDI IN cables): these are the devices connected to the MIDI IN jacks on the MIDI Time Piece II.

Channel Mapping window

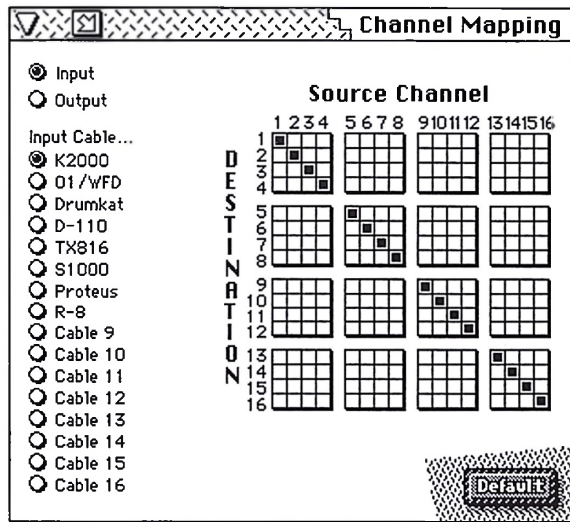
Output devices (MIDI OUT cables): these are the devices connected to the MIDI OUT jacks on the MIDI Time Piece II.

Connections: these lines represent a routing from an input on the left to one or more outputs on the right.

Selected cable: a routing that is currently selected. Selected routings can be deleted.

MIDI Channel indicator: shows what MIDI channels have been specified in the routing.

The Channel Mapping window allows you to change the channel of data as it enters or leaves the MIDI time piece on any input or output cable.



Cable Buttons: Select the cable whose MIDI channels will be remapped in the check box grid to the right. Each cable has its own channel map. To toggle between input and output, click the Input and Output buttons above.

Edit menu

MIDI Channel Check Box Grid: Contains check boxes that map their source channel (column number) to their destination channel (row number).

Source Channel: Columns represent the 16 channels to be mapped. Only one check box can be selected in each column. This is because each source channel can be mapped to only one destination channel.

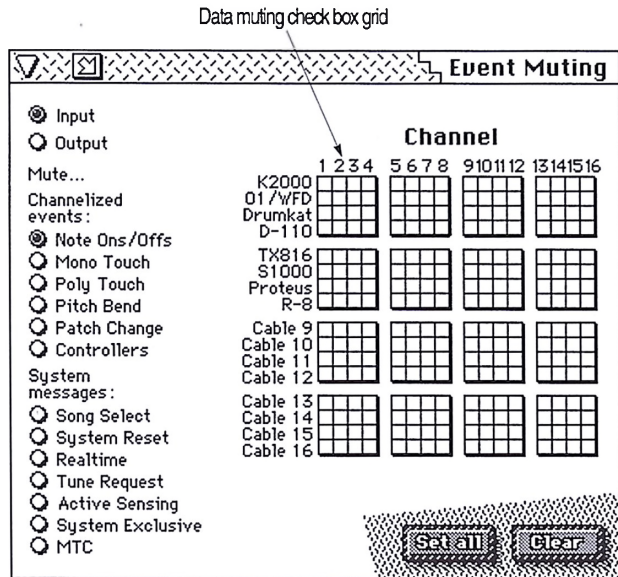
Destination Channel: Rows represent the 16 possible channels to which a source channel can be mapped. You can select as many check boxes as you like in a row.

Default Button: Returns the mapping grid to an unchannelized state, where channel 1 goes to channel 1, channel 2 goes to channel 2, and so on. The default state appears as a diagonal line from upper left to lower right.

The edit menu contains standard Macintosh Cut, Copy, Paste, and other edit commands.

Event Muting window

The Event Muting window allows you to mute any type of MIDI data on any input or output on the MIDI Time Piece II.



Channelized Events: Selects a type of data to be muted in the grid to the right. This category of MIDI data consists of data that is channel specific, such as MIDI note data.

System Messages: Selects a type of data to be muted in the grid to the right. This category of MIDI data consists of all system common data types—MIDI data that is not channel specific. When one of these data types is selected, an entire row of check boxes will select when you click any box in the row. This indicates that the non-channel specific data type will be muted on all channels on that cable.

Data Muting Check Box Grid: Contains check boxes that mute data on a MIDI channel (column number) and cable (row number).

Channel: Columns in the grid refer to the 16 MIDI channels available on each MIDI Time Piece cable.

File menu

Knob & Pedal Assignment window

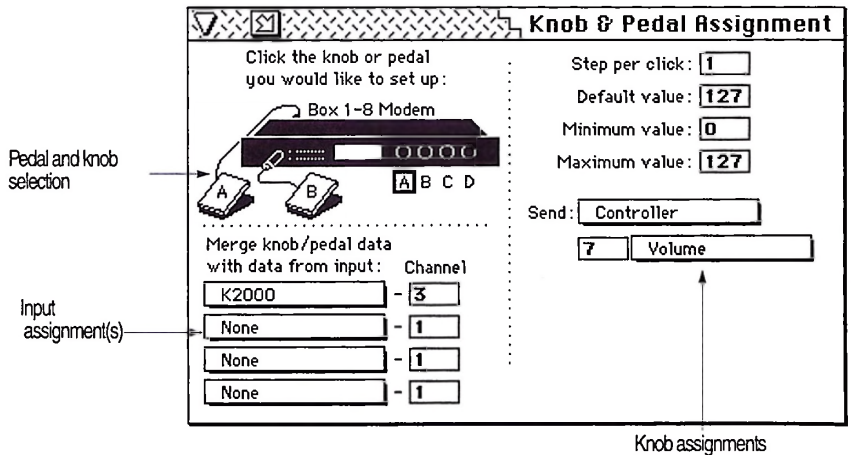
Cable: Rows in the grid refer to the 16 MIDI IN or MIDI OUT cables available in a MIDI Time Piece network.

Clear Button: Deselects all check boxes in the grid, which unmutes all channels.

Set All Button: Selects all check boxes in the grid, muting data on all channels.

This menu contains standard Macintosh file menu commands to open and save files that store the contents of the MIDI Time Piece II memory.

The Knob & Pedal Assignment window lets you program the pedal inputs and front panel knobs on the MIDI Time Piece II. For example, you can make the knobs on the front panel generate MIDI controller data or system exclusive data, which can be routed to anywhere in the MIDI Time Piece network.



Pedal and knob selection: Determines which pedal input or knob you are setting up with the rest of the parameters in the window. Click the knob or pedal to select it.

Knob assignments

Input assignment: data generated by a knob or pedal is assigned to one of the MIDI Time Piece II's inputs; the data is then routed to whatever output cables and/or serial ports that the input is routed to.

Steps per click: determines the number of units of change for each click of the knob as you turn the knob. Normally, one click equals one unit. But if you set this value to 5, the knob will send out values of 0, 5, 10, 15, 20, 25, and so on as you turn the knob.

Default value: Determines the value that the knob will be set to when you first select the modifier or base setup that calls the knob settings.

Minimum value: Determines the lowest controller or sysex value that the knob will be able to send when you turn the knob counter-clockwise all the way.

Maximum value: Determines the highest controller or sysex value that the knob will be able to send when you turn the knob clockwise all the way.

Send: A pop-up menu that allows you to select which type of data the knob will generate when you turn it. A knob can send any MIDI notes, controllers, patch changes, or a sysex message of up to 30 bytes (with one variable byte).

Knob & Pedal Assignment

Click the knob or pedal you would like to set up:

Box 1-8 Modem

A B C D

Merge knob/pedal data with data from input:

Merge knob/pedal data with data from input:	Channel
K2000	3
None	1
None	1
None	1

Polarity: Positive

Pedal Type: Roland expression

Minimum value: 0

Maximum value: 127

Send: Controller

7 Volume

Pedal assignments

Pedal assignments

Polarity: Determines whether values will go up (positive polarity) when you press down on the pedal or down (negative).

Pedal Type: Allows you to describe the type of pedal that is connected to the input. You have five choices: Roland expression, Korg expression, click to MIDI, and Momentary (foot switch), and None. Roland and Korg expression pedals are continuous control pedals, where the MIDI Time Piece II reads the position of the pedal and maps it to a MIDI value between zero and 127. The foot switch setting should be used for momentary foot pedals. If you choose the click-to-MIDI option (which is only available on the Pedal A input on the rear panel), skip the rest of the steps in this section and see “Using an audio click as a tempo source” on page 72.

- **Click-to-MIDI:** (Pedal A only) This choice allows you to connect an audio input to Pedal A and convert a click or other audio tempo source into MIDI data which can be used to slave MIDI gear or software to the audio tempo source.
- **Foot switch:** Choose this option when you have a momentary foot switch pedal connected. The two values that the pedal will send are the minimum and maximum values.

Minimum value: Determines the lowest controller or sysex value that the pedal will be able to send.

Maximum value: Determines the highest controller or sysex value that the pedal will be able to send.

Send: A pop-up menu that allows you to select which type of data the pedal will generate when you press and release it. A pedal can send any MIDI notes, controllers, pitch bend, patches changes, and sysex messages of up to 30 bytes (with one variable byte).

Click-to-MIDI assignments

Threshold: Determines how high the audio input level must be in order to register as input. Its value must be between 0 and 70.

Knob & Pedal Assignment

Polarity: Positive

Pedal Type: Click-to-MIDI

Threshold: 0 Decay: 0

Convert click to: Click data:

Note Channel: 1

Controller Pitch: 68

Hex Velocity: 0

Click-to-MIDI Assignments →

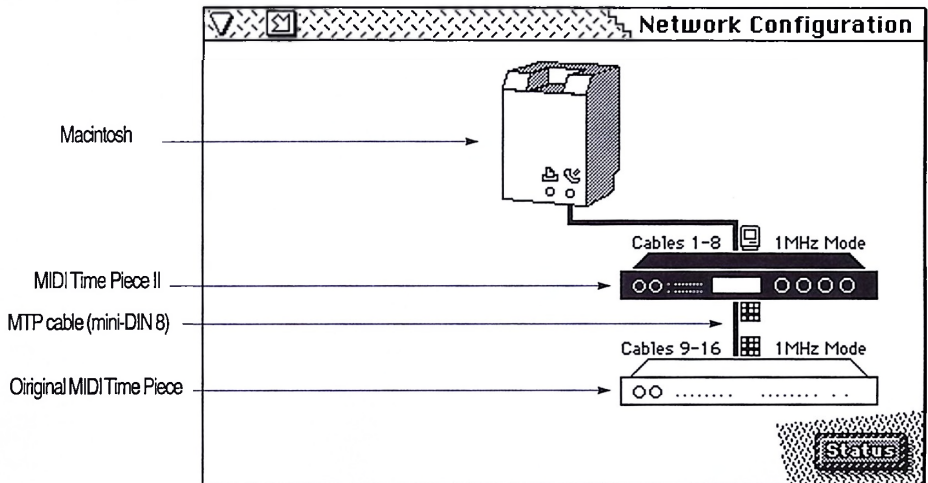
Decay: Decay prevents double attacks. Its value must be between 1 and 31.

Convert click to: Determines what type of MIDI data the audio will be converted to. Choices are:

- **Note:** converts the click into any MIDI note event that you specify under click data by entering the note's channel, pitch and velocity.
- **Controller:** converts the audio into any MIDI controller that you specify under click data by typing in the controller's channel, number and value.
- **Hex:** converts the audio into any type of MIDI event, which you specify under click data by entering the event's hexadecimal values.

Network Configuration window

The Network Configuration serves as a diagnostic tool for your MIDI Time Piece network. It shows you how many MIDI Time Pieces are connected to the network, how they are connected to each other, and how they are connected to your Macintosh.



Macintosh: Represents the Macintosh that is running the MTP DA. It displays connections to the modem and printer serial ports on the rear of the computer.

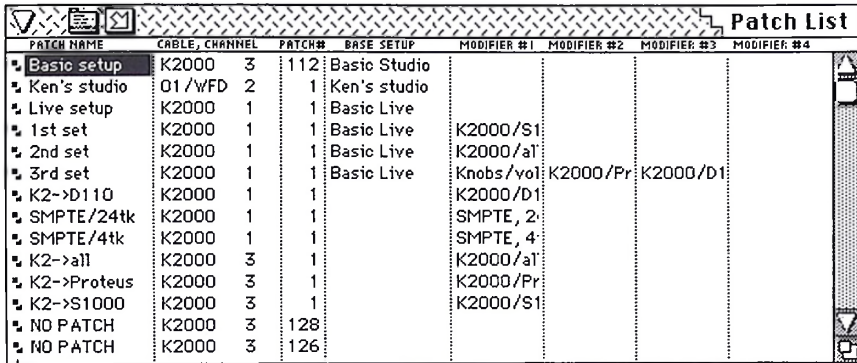
MIDI Time Piece: Represents each MIDI Time Piece in the network. Each MTP displays its network setting (cables 1-8 or 9-16), its computer speed (1 MHz or Fast), and the connections to its Mac port and Network port.

MTP Cable (mini-DIN 8): Represents a circular, mini-DIN 8 (RS-422) cable that connect the MTP's together and to the computer. Each cable shows to which serial port it is connected.

Status Button: Checks the network and redraws the diagram in the window. If you change the network, such as switch on an MTP or plug in a cable, communication between the DA and the MIDI Time Piece is broken. To reestablish communication, click Status and the window will update to reflect any changes you have made to the hardware.

Patch List window

The Patch List window lets you build up to 127 patches that you can recall via MIDI patch change events.



PATCH NAME	CABLE	CHANNEL	PATCH#	BASE SETUP	MODIFIER #1	MODIFIER #2	MODIFIER #3	MODIFIER #4
Basic setup	K2000	3	112	Basic Studio				
Ken's studio	01 /wFD	2	1	Ken's studio				
Live setup	K2000	1	1	Basic Live				
1st set	K2000	1	1	Basic Live	K2000/S1			
2nd set	K2000	1	1	Basic Live	K2000/a1			
3rd set	K2000	1	1	Basic Live	Knobs/vol	K2000/Pr	K2000/D1	
K2->D110	K2000	1	1		K2000/D1			
SMPTE/24tk	K2000	1	1		SMPTE, 2			
SMPTE/4tk	K2000	1	1		SMPTE, 4			
K2->all	K2000	3	1		K2000/a1			
K2->Proteus	K2000	3	1		K2000/Pr			
K2->S1000	K2000	3	1		K2000/S1			
NO PATCH	K2000	3	128					
NO PATCH	K2000	3	126					

Move handles

Move handles: Re-order the patches in the list when you drag them up or down.

Patch name: A name for each of the 127 patches that the MIDI Time Piece II can store.

Cable, channel: The cable and channel that the MIDI Time Piece II monitors for the patch change event that calls up the patch. If you want to be able to receive the patch change from any cable, choose the All. If you would like to be able to receive the patch change from any channel, select *Any*. To disable the patch, select *None*.

Patch # (number): The value (0 to 127) of the MIDI patch change event that recalls the patch.

Base Setup: A pop-up menu that lets you assign one of eight MIDI Time Piece II basic configurations to the patch. Note that you are not required to assign a setup: this option can be set to *None*.

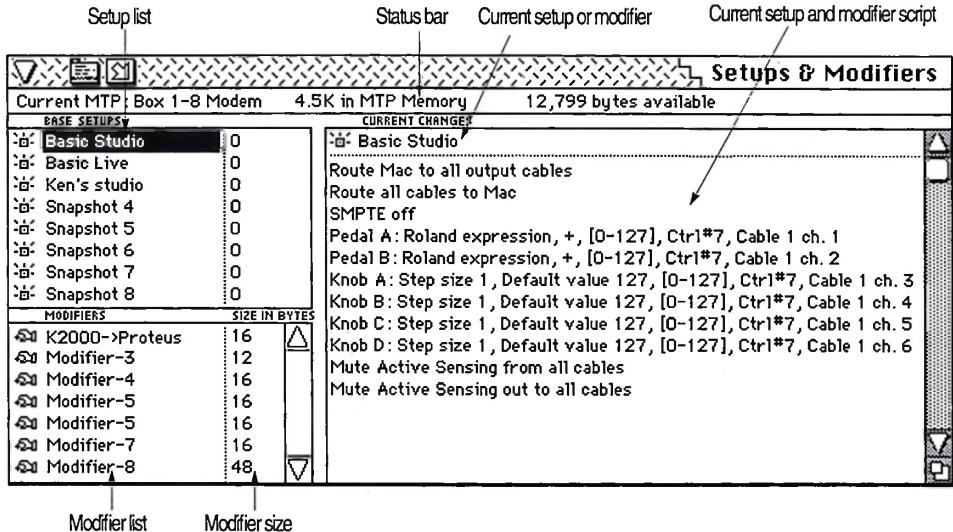
Modifier #1, #2, #3, and #4: Each one of these columns is a pop-up menu that lets you assign a modifier to the patch. Up to four modifiers can be used per patch.

Serial ports window

This window allows you to enable or disable the serial ports that the MTP II Console accesses for MIDI. Click the serial port that the MIDI Time Piece II is connected to.

Setups & Modifiers window

The Setups & Modifiers window allows you to create, save, and edit multiple base setups in the MIDI Time Piece II. In addition, it allows you to create, save, and edit modifiers.



Current MTP: Displays the MIDI Time Piece II in the network that you are currently working with in the window.

___ in MTP Memory: Displays (in kilobytes) how much RAM is currently being used in the MIDI Time Piece II's memory by base setups and modifiers.

___ bytes available: Displays (in bytes) how much RAM is currently empty and available in the MIDI Time Piece II's memory for modifiers.

Move handles: Allows you to drag the base setup or modifier up or down in the list.

Setup list: Displays the eight base setups in MIDI Time Piece II memory.

Status bar: Displays the current MIDI Time Piece II, how much RAM memory is being used by base setups and modifiers, and how much RAM is available.

Current setup or modifier: Displays the current base setup or modifier that has been called up.

Current setup or modifier script: Displays an itemized list of commands that comprise the base setup and each modifier. Each command is a description of a specific setting in the MIDI Time Piece II. Italicized items in the script are commands that have been made but that have not yet been saved as part of a base setup or modifier.

Modifier list: Displays all modifiers that are currently stored in the MIDI Time Piece II's battery-backed, RAM memory.

Modifier size: Displays the size (in bytes) of the modifier. The more commands a modifier has, the larger it becomes.

SMPTE Controls window

The SMPTE Controls window provides controls for all of the MTP II's SMPTE synchronization capabilities.

The screenshot shows the 'SMPTE Controls' window with the following settings:

- SMPTE Reader:**
 - HOURS: 00, MINUTES: 00, SECONDS: 00, FRAMES: 00
 - Frame Rate: 30, Format: DTLe
 - MIDI Time Piece: 1-8
- SMPTE to MIDI Conversion:**
 - Convert incoming SMPTE to:
 - Off
 - MIDI Time Code (MTC)
 - Direct Time Lock (DTLe)
 - Freewheel: 4 frames
 - "One time" jam sync (locks to existing code, but begins independent striping at first drop-out)
- SMPTE Stripping:**
 - Start time: 00:00:00:00
 - Stop time: 23:59:59:00
 - Frame rate: 24, Drop Frame, 25, 30
 - SMPTE output level: Reference level to:
 - 9, 0, -10 dB
 - 6, +3, +4 dB
 - 3
 - Buttons: Time code routing..., Strip, Stop

SMPTE Reader: Displays SMPTE time code that the MIDI Time Piece II reads or generates. It does so by responding to MIDI Time Code (MTC) or Enhanced Direct Time Lock (DTLe) that the MIDI Time Piece sends to the Macintosh while syncing to or generating SMPTE.

Hours:Minutes:Seconds:Frames: Displays the current SMPTE location. When no MIDI sync has been generated or received, the reader displays dashes.

Frame Rate (in the SMPTE Reader): Displays the frame rate (in frames per second) of the SMPTE being generated or received by the MIDI Time Piece. The frame rate can be 24, 25, 30, or DF (Drop Frame).

Format: Displays the format of the MIDI sync that the MIDI Time Piece is generating or receiving SMPTE. There are two such formats: MIDI Time Code (MTC) and Enhanced Direct Time Lock (DTLe).

MIDI Time Piece: Displays the port and box information of the MIDI Time Piece that is currently reading or writing SMPTE. When the MIDI Time Piece generates MTC, this field will be blank since MTC does not indicate the device sending the MIDI sync.

Convert incoming SMPTE to: Determines what type of time code the MIDI Time Piece will generate while converting SMPTE. When the Off option is chosen, the MIDI Time Piece generates no MIDI sync.

Freewheel ___ frames: Sets the number of frames that the MTP will run on its own (or “freewheel” past) when it encounters a drop out in the time code that it is locking to. Values are 0, 1, 2, 4, 8, 16, and 32 frames. Because the MTP II always generates fresh time code while locking to existing code, this option can be used to generate fresh time code with drop-outs removed.

“One time” jam sync: When the MTP II locks to incoming time code, this option causes it to begin striping on its own at the first drop-out it encounters in the incoming time code. To stop striping, click the Stop button, or wait until the MTP II reaches the stop time. Because the MTP II always generates fresh time code while locking to existing code, this option can be used to generate fresh time code over large drop-outs or to lengthen an existing SMPTE track.

Time code routing: Opens a window that lets you choose where time code will be sent in the MTP II network, including the Macintosh, anything that is connected to the MTP's network port, and anything connected to the MIDI OUT jacks.

Start time: Determines the frame time at which the MTP will begin when you click the Stripe button to generate (record) time code.

Stop time: Determines the SMPTE frame at which striping will automatically stop after you click the Stripe button to generate time code.

Frame rate: determines which SMPTE time code frame rate to be generated. Unless you are working with film, video or European formats, we recommend using 30.

Output Level: Determines the strength of the SMPTE audio signal generated from the SMPTE OUT jack on the rear panel relative to the reference level chosen to the right.

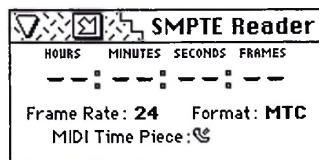
Reference level to: Sets the strength of the SMPTE audio signal generated from the SMPTE OUT jack. Use -10 dB for semi-professional recording equipment or +4 dB for pro gear.

Stripe button: Causes the MIDI Time Piece to begin generating SMPTE time code. SMPTE is sent via the AUDIO OUT jack on the rear panel.

Stop button: Causes the MIDI Time Piece to stop generating SMPTE time code.

SMPTE Reader

The SMPTE Reader provides a running update of SMPTE time code being converted or generated by the MIDI Time Piece II. It is identical to the SMPTE Reader in the SMPTE Controls window.



Hours:Minutes:Seconds:Frames: Displays the current SMPTE location. When no MIDI sync has been generated or received, the reader displays dashes.

Frame Rate: Displays the frame rate (in frames per second) of the SMPTE being generated or received by the MIDI Time Piece. The frame rate can be 24, 25, 30, or DF (Drop Frame).

Format: Displays the format of the MIDI sync that the MIDI Time Piece generates generating or receiving SMPTE. There are two such formats: MIDI Time Code (MTC) and Enhanced Direct Time Lock (DTLe).

MIDI Time Piece: Displays the port and box information of the MIDI Time Piece that is currently reading or writing SMPTE. When the MIDI Time Piece generates MTC, this field will be blank since MTC does not indicate the device sending the MIDI sync.

Utilities menu

The Utilities menu contains several commands that help you manage a MIDI Time Piece network.

Box Select: Lets you choose which MIDI Time Piece in the network you want to be editing in the windows from the Windows menu.

Verify Network: Causes MTP II Console to poll the MTP network and find out what units are connected and obtain their basic hardware configuration.

Save MTP 1 Default: Saves the current network settings to any original MTP connected to the network. The original MTP will then power up with the saved settings.

Windows menu

Contains all of the windows that control the MIDI Time Piece II.

Appendix A *Glossary*

Address Track: A third audio track, used for time code, located on the edge of the video signal on a 3/4" VTR. Because of its proximity to the video signal, the address track cannot be recorded by itself; it must be recorded simultaneously with the video signal.

ATR: *Audio Tape Recorder.* A device that can record an audio signal on audio tape.

Base setup: One of eight MIDI Time Piece II internal basic configurations. Each base setup stores all of the MIDI Time Piece II internal settings as one configuration. Each base setup can be configured differently from the others.

Burn-in Window: A numeric display of time code superimposed over the video picture to aid in the post-production editing process.

Cable routing: An internal connection from one of the MIDI Time Piece II's MIDI IN ports to one or more of its MIDI OUT ports.

Control Track: A video tape track located at the edge of the video tape containing a series of pulses that serve as a reference tracking the tape speed. This track is recorded with the video signal.

CRC: *Cyclic Redundancy Check.* An error detection process performed by a device reading time code to ensure that no bits have been missed in each time code data word.

CRT: *Cathode Ray Tube.* The glass screen in TV's, computers, etc. upon which video images are projected.

Crosstalk: Interference on a track from the signal of an adjacent track on a multitrack tape recorder.

Default: An initial value or configuration.

Drop Frame: A SMPTE time code format used to compensate for an accumulating timing error in color video. Drop Frame skips two frames at the beginning of each minute (except every 10th minute) as

it counts color video frames. The result is that the SMPTE time code values match the actual elapsed time, since color video runs slower (29.97 frames per second) than black and white video (30 frames per second). Drop-frame is required only with color video programs in which the SMPTE time code numbers must precisely match the actual elapsed time.

Drop-out: A brief period of missing information in a continuous signal, such as a video signal or SMPTE time code signal. Drop-outs are usually caused by small, physical imperfections in the surface of the tape on which the signal is recorded.

EDL: *Edit Decision List.* A record of all the edits to be made in creating a video.

Flywheeling: Another name for *Freewheeling*. See *Freewheeling* below.

Foley Effect: Sound effects that are added in a controlled studio environment.

Freewheeling: A process in which a synchronizer, such as the Video Time Piece, continues to generate time code even when it encounters drop-outs in a time code source. Converters may briefly lose synchronization during a drop-out and, in turn, momentarily stop converting time code. By default, the Video Time Piece will freewheel for 2 frames in a row of missing or damaged time code. However, it has the ability to freewheel for any number of frames, making it less susceptible to drop-outs.

FSK: *Frequency Shift Key.* An audio time code consisting of a series of pulses which increment the counter of an FSK reading device.

Genlock: A process in which a video generator generates (graphics, picture, or VITC) is locked in phase with an external source.

Guard Track: An empty track adjacent to the LTC track on a multitrack tape recorder. A guard track prevents crosstalk from another track, which can interfere with the time code and cause synchronization problems.

Hard Record: A mode on a VTR that erases and records all tracks simultaneously.

Horizontal Blanking: A short period of time in the video display process in a CRT when the electron beam is shut off to retrace to the next horizontal scan line (similar to a carriage return on a typewriter).

House Sync: A process in which all video equipment in a studio is connected to and genlocks to a single video sync generator.

Input cable: One of the eight (or sixteen) MIDI IN jacks in a MIDI Time Piece network.

Insert Record: A mode on a VTR that records on the video tracks without recording on the audio tracks, or vice versa.

Jam Sync: The process of creating fresh, error-free time code or extending existing time code on tape by locking a time code generator to existing code.

LCD: *Liquid Crystal Display.* The alpha-numeric display on the front panel of the MIDI Time Piece II.

LTC: *Longitudinal Time Code.* The Society of Motion Picture and Television Engineers (SMPTE) time code format, expressed in audio form as an 80-bit binary audio signal, that describes the location of each frame on film, video, or audio tape in hours, minutes, seconds, and frames. LTC's video counterpart is VITC (*Vertical Interval Time Code*), which is the same time code format in the form of a video signal. In audio production, LTC is often referred to as *SMPTE* or *SMPTE time code* since VITC used to be seldom.

MIDI: *Musical Instrument Digital Interface.* An information protocol developed in the early 1980's by synthesizer and electronic instrument manufacturers to allow devices to communicate musical performance data to one another.

MIDI Manager: A multi-tasking software environment provided by Apple Computer, Inc. for the Macintosh which allows several MIDI programs to simultaneously communicate with each other and the Macintosh serial ports.

Modifier: A command, or set of commands, that changes one or more of the MIDI Time Piece II's internal settings.

MTC: *MIDI Time Code*. A form of time code, digitized within the MIDI format, that expresses time in hours, minutes, seconds, and frames, just like SMPTE time code (LTC and VITC).

Network: Two MIDI Time Pieces connected via their NETWORK serial ports with a mini-DIN 8 cable.

Non-drop Frame: A SMPTE time code format that does not drop any frames. Its counterpart, Drop Frame, skips over the first two frames of every minute (except every 10th minute). Non-drop is the least confusing format and should be used unless Drop Frame is required. Drop-frame is required only with color video programs in which the SMPTE time code numbers must precisely match the actual elapsed time.

NTSC: *National Television Systems Committee Format*. A system of coding color information for broadcasting television formulated by the NTSC. NTSC uses 30 frames per second for black and white and 29.97 frames per second for color.

Output cable: One of the eight (or sixteen) MIDI OUT jacks in a MIDI Time Piece network.

PAL/SECAM: *Phase Alternate Line*. A system of coding color information that is similar to (but incompatible with) NTSC format. PAL/SECAM uses 25 frames per second.

Patch: In the MIDI Time Piece II, a patch can be a base setup, a modifier, a combination of a base setup with up to four modifiers, or several (up to four) modifiers by themselves. A patch has a MIDI program change assignment, which can be called up by sending a MIDI program change to the MIDI Time Piece II.

Script: An itemized description of the commands that make up a base setup or modifier. The script is displayed in the Setups & Modifiers window when the setup or modifier is selected.

Sequencer: A computer or software running on a computer that is capable of recording and playing back MIDI data.

SMPTE: *Society of Motion Picture and Television Engineers*. The acronym *SMPTE* is often used in audio production as a shorthand expression for *SMPTE Time Code*.

SMPTE Time Code: A series of binary impulses that express the location of each frame on film, video, or audio tape in hours, minutes, seconds, and frames. SMPTE has two forms: 1) an 80-bit audio signal, called *Longitudinal Time Code* (LTC), or 2) a video signal recorded in the vertical blanking segment of video frames, called *Vertical Interval Time Code* (VITC). In either form, SMPTE Time Code has four different formats for counting frames per second (fps): 24 fps, 25 fps, 30 fps, and Drop Frame. 24 is used mostly with film; 25 is a European format for film; 30 is the US standard for audio and video; Drop Frame is required only with color video programs in which the SMPTE time code numbers must precisely match the actual elapsed time.

SMPTE-to-MIDI Converter: A device that reads SMPTE time code from audio or video tape and converts it to MTC or DTL to synchronize MIDI devices to tape.

Striping: The process of recording SMPTE time code.

Switcher/Special Effect Generator: A machine that takes multiple video input signals and routes them to a variety of destinations to add special effects such as dissolves.

Synchronizer: A device that reads time code from audio or video tape and is used to synchronize the timing of two or more devices.

Time Code Generator: A device that is capable of producing LTC, VITC, or both.

Time Code Window: A display of SMPTE time code numbers on a video screen.

User Bits: 32 unassigned bits in the 80-bit SMPTE time code word that have been set aside by the Standards Committee of SMPTE for users to place their own information in the time code, such as the shooting date, take identification, reel number, and so on.

Vertical Blanking: The area on video tape between video frames, which can be seen as the "black bar" above or below the picture when the vertical hold is adjusted. This area is where VITC can be recorded.

Video Field: One half (1/60th of a second) of a complete video scanning cycle (one video frame), which consists of 525 video scan lines. One video field consists of the odd-numbered scan lines; the other consists of the even-numbered scan lines.

Video Frame: One complete video scanning cycle, which consists of two video fields.

VITC: *Vertical Interval Time Code.* The Society of Motion Picture and Television Engineers (SMPTE) time code format, expressed in video form as binary video signal recorded in the vertical blanking segment between frames, that describes the location of each video tape frame in hours, minutes, seconds, and frames. VITC's audio counterpart is LTC (*Longitudinal Time Code*), which is the same time code format expressed in the form of a binary audio signal.

VTR: *Video Tape Recorder.* A device that can record a video signal onto video tape.

Appendix B *Using the MTP with MIDI Manager*

What is MIDI Manager?

MIDI Manager is a System Folder startup document developed by Apple that allows you to run several MIDI programs at the same time. For example, you can play back a sequence in Performer and while the sequence is playing, use patch librarian software to change sounds on a synthesizer.

Here are some other things that MIDI Manager allows you to do:

- Synchronize two or more MIDI programs to each other or to external time code
- Send MIDI data to a synthesizer from two or more Mac programs at the same time
- Send MIDI data from one program to another
- Send MIDI data to a NuBus card device such as MacProteus™ or SampleCell™

MIDI Manager has one important disadvantage. It slows down the operation of the computer. If you have a Macintosh Plus, SE, or Class, you might find that the computer becomes too sluggish. You may need to obtain a faster computer or an accelerator board.

What is the MTP MIDI Manager driver?

The MTP MIDI Manager driver was developed by Mark of the Unicorn. It allows you to run MIDI manager with the MIDI Time Piece. Specifically, the MTP MIDI Manager driver provides you with all of MIDI Manager's capabilities, while at the same time allowing you to access all 128 MIDI channels on the MIDI time piece, as well as the FAST/1X data transfer rate.

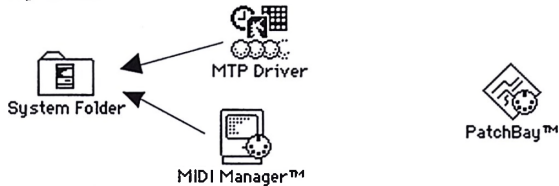
Installing the MTP Driver

To install MIDI Manager with the MTP MIDI Manager driver:

- 1. Insert the MIDI Time Piece disk.**

2. Drag the MIDI Manager icon and the MTP MIDI Manager driver icon into the System Folder.

If you are running System 7, a message window appears to confirm that it should be placed in the Extensions folder. Only MIDI Manager goes in Extensions folder. The MTP driver must be in top level.



NOTE: MIDI Manager ships from Apple with its own driver. It's called the "Apple MIDI Driver". You are allowed to have both the Apple MIDI Driver and the MTP Driver in the System Folder at the same time. To avoid confusion, you may want to remove the Apple MIDI Driver. If you are an expert user, please note that you can enable the MTP driver on one serial port and enable the Apple MIDI driver on the other port.

3. If you haven't already done so, drag PatchBay™ onto your hard disk.

You can place it anywhere on the hard disk.

4. Restart the computer.

Doing so activates MIDI Manager.

Setting the MTP Driver

To set up MIDI Manager for the MIDI Time Piece:

1. Open PatchBay.

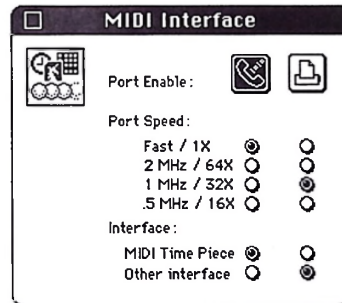
You should see the MTP MIDI Manager driver icon on the left. If you have MTP II Console running, you will see the its icon as well.

2. Double-click the MTP MIDI Manager driver icon to set up the ports.

If the MIDI Time Piece is properly connected to the computer, the MTP menu appears in the menu bar. If not, you'll see a message that tells you that no MIDI Time Piece is connected. Check the cable connections and try again.

3. Choose MIDI Interface from the MTP menu.

The MIDI Interface window appears.



4. Click the port enable button(s) for the port to which the MIDI Time Piece (or other MIDI interface) is connected.

5. Beneath the enabled port, choose the appropriate port speed.

The port speed you choose here must match the speed of the interface. The MIDI Time Piece has a speed switch on the front panel. Choose a setting here that matches that switch setting.

6. Indicate beneath the port whether it is a MIDI Time Piece or other interface.

To avoid problems between the MIDI Time Piece and QLS, leave the printer port disabled at all times.

**A note to Kurzweil
QLS™ users**

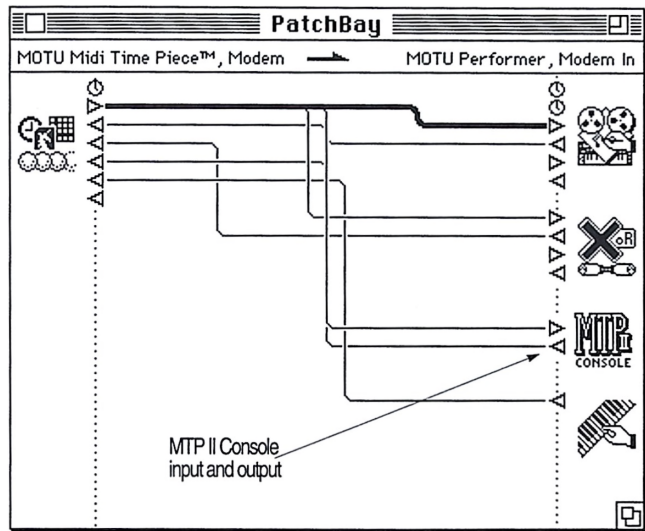
Changing the port settings

Using MTP II Console or other software

If you change the way that your MIDI Time Piece or other interface is connected to the Mac, you need to change the MIDI interface settings accordingly. To do so, use the procedure above.

Once you have completed the procedure in this section, you are ready to run MTP II Console or your other MIDI Manager and MIDI Time Piece compatible software.

Make sure that MTP II Console input and output is connected to the MTP Driver as shown below.



Connect other software inputs and outputs to the MTP Driver as needed. The driver always provides an extra, free input to which another output can be connected.

If you have other MIDI Manager compatible software, but it does not specifically support the MIDI Time Piece, it will receive and send data on all eight MIDI Time Piece inputs and outputs at once. Contact the developer for information about a version that supports the MIDI Time Piece in MIDI Manager.

Appendix C **Troubleshooting and Customer Support**

Common problems and solutions

MTP II Console keeps displaying a message saying that no MIDI Time Piece is connected to the Macintosh even though one is connected.

If the problem is not simply that the MIDI Time Piece is switched off or has a loose cable, it may be that communication between MTP II Console and the MIDI Time Piece II has been disrupted somehow. If you have a drum machine or sequencer connected to it, be sure that it is not sending MIDI sync to the MTP. If so, turn off the drum machine while booting the DA and then mute real time data on its input cable. To reestablish the connection between MTP II Console and the MTP, switch off all MIDI Time Pieces in the network, quit the console, let the boxes sit for a moment, and then turn them back on again. You may want to try turning them back on again just one at a time. Turn on Box 1-8, and try opening the console and/or clicking the Status button in the Network Configuration window. Always return to the simplest possible scenario if you just can't seem to get to the bottom of the problem. Starting from the ground up usually either corrects the problem or gives you valuable insight into how to solve it.

The LEDs on the front panel of the MIDI Time Piece blink erratically as soon as I turn it on and the box doesn't operate properly.

This is a symptom that MIDI software running on the Macintosh is set to a different communications speed than the MIDI Time Piece. To get things back to normal, switch the box off and on again. Then, to reestablish communication with the Macintosh, open MTP II Console and click Status in the Network Configuration window. To prevent this from happening again, be sure that the MIDI Time Piece mode Mac speed matches the software (1 MHz or Fast 1X). This type of "light show" can also be caused by INITs and other Macintosh software that sends miscellaneous data out the Macintosh serial ports when the Macintosh boots up. In general, it is a good idea to leave the MIDI Time Piece turned off until after the Macintosh has booted up. If the blinking is regular but faint, its just harmless active sensing from the synth.

The MIDI Time Piece will not sync to SMPTE.

Make sure that the SMPTE IN cable is firmly seated and connected to the appropriate output on the tape deck. Observe the LTC LOCK light. Is it flickering quickly and steadily? If so, the MIDI Time Piece is locked to tape and the syncing problem is probably related to MIDI. If not, check the level of the SMPTE: it should be approximately -3 VU; then, try boosting or attenuating the SMPTE signal from the tape. You may even want to try recording some fresh SMPTE and locking to it.

The SMPTE Reader window just sits there when the MIDI Time Piece is syncing to SMPTE, even when its LTC LOCK LED shows that it seems to be locked up just fine.

This most likely means that MIDI Sync (MTC or DTLe) is turned off in the SMPTE Controls window, or the MIDI Sync is not being routed to the Macintosh. Click the Time Code Routing button and be sure that the computer option is checked.

My MIDI software won't sync to tape and the MIDI Time Piece.

Make sure that the MIDI Time Piece is slaved to SMPTE first by opening the SMPTE Reader. Then, make sure that it is generating the type of MIDI sync that the software requires (MTC or DTLe). As long as the SMPTE Reader window shows that the MIDI Time Piece is successfully locking to the SMPTE and generating MIDI sync, MIDI software should also be able to lock to the MIDI sync signal.

My Performer program won't sync to tape and the MIDI Time Piece, no matter what I do.

Are you using Version 3.4 or higher? If not, then you need to update because older versions of Performer don't support either DTLe or MTC. Contact Mark of the Unicorn for information about updating. If you are using Version 3.4 or higher, make sure that DTL is chosen in the Receive Sync dialog box. Make sure the correct port (modem or printer) is chosen. Use the MIDI Monitor Window to see on which port the MIDI Time Piece is sending DTLe and to make sure it is sending DTLe and not MTC. In the MIDI Monitor window, DTLe lights up the "RT" and "CO" indicators. MTC lights up only the "CO" indicator. If it's MTC, remember that Performer only syncs to DTLe. You need to choose DTLe in the MTP II Console SMPTE Controls window.

When I play notes from my MIDI controller, the notes sound funny/chopped off/phased/etc. OR I run out of voices sooner than I should on my sound sources.

This means that you are probably routing data to the sound source twice by accident, either via the Auto-Channelize feature in Performer or other MIDI software, or via a route you were not aware of in the Cable Routing or Channel Mapping windows in MTP II Console. To solve the problem, try to identify where the extra routing is coming from. For example, switching off the Macintosh will tell you if it's the culprit or not. The Cable Routing window is also a good place to hunt for a problem.

MIDI data received from the network by the Macintosh is garbled. Likewise, MIDI data going from the Macintosh to the network gets garbled, too.

First, be sure that the Mac speed on the MTP II is set properly (either 1 MHz or Fast 1X). If it is, then the DIN-8 cable between the Macintosh and the network may be too long, or it may need replacing. A length of no more than 30 feet is recommended and, depending on the electromagnetic environment, maybe even less. Because a limitation of the Macintosh serial ports, well-balanced, standard RS-422 compatible signals cannot be used between the MIDI Time Piece and the Macintosh; therefore, the signal in the cable can get noisy as the length of the cable increases. In general, use a cable that is shielded, has approximately 100 Ohms characteristic impedance and has as little capacitance as possible.

Cables between networked MIDI Time Pieces, on the other hand, can be very long because the MIDI Time Piece network ports conform to the RS-422 standard. With a good enough cable, signal between two MIDI Time Pieces should be able to travel over 1,000 feet.

My old DX7 causes problems on the MTP as soon as I plug its MIDI OUT cable into one of the MIDI IN cables.

Very old DX7s emit a continuous stream of Yamaha system exclusive message headers (F0 43) as a form of active sensing. This output can interfere with the MTP. As a result, we recommend that you mute system exclusive data on the MIDI Time Piece input cable to which your old DX7 is connected.

You can determine if your DX7 emits this form of active sensing by connecting a MIDI cable from the MIDI OUT on the DX7 to any MIDI IN on the MIDI Time Piece. Look at the input LED to see if it flickers continuously. If so, it is emitting active sensing data, either in the form of regular MIDI active sensing (which is OK) or Yamaha system exclusive headers (which will cause problems). Mute system exclusive on the input cable and then route the input cable to any output cable. If the output cable LED does not flicker, it shows that you have successfully muted the system exclusive sensing on the DX7 input cable. (The input cable LED will continue to flicker even when system exclusive is muted.) Refer chapter 5, "Muting MIDI Data" for information about muting system exclusive data.

When I try to send system exclusive data through the network, it doesn't get sent properly.

Large system exclusive (sysex) messages may overflow the MTP's MIDI buffers when operating in FAST 1X mode. If you have trouble routing sysex through the network, try switching the mode switch (and your MIDI software) to 1 MHZ. This should prevent buffer overflow, even with extremely large sysex messages, such as digital sample dumps.

I can't successfully complete sample transfers with my Akai S900 or S950 sampler.

You need to place the MIDI Time Piece II in Direct Connect mode. See "DIRECT CONNECT" on page 105.

My JLCoper FaderMaster (or other MIDI device) behaves strangely when I send it MIDI data from the MIDI Time Piece.

You might need to defeat running status on the output cable to the device. See "RUNNING STATUS" on page 105.

Preventing catastrophe

Keep your Desk Accessory master disk locked (write-protected) at all times by sliding the tab on the back of the disk open so that light can be seen through the rectangular aperture. We recommend that you use the master disk only as a resource from which to make working copies. Should your copy become damaged, you will always be able to go back to the master disk for a fresh working copy.

Troubleshooting

Troubleshooting is always simplest and most effective when the exact problem can be specified clearly and concisely. If you are surprised by an error message or by seemingly erratic behavior in the console or network, take a moment to jot down the relevant details: exactly what the error message said (including any error ID numbers), what actions were done on-screen just before the problem occurred, what kind of file you were working with, how you recovered from the problem, and any unusual conditions during the occurrence of the problem. This may not enable you to solve the problem at once, but will greatly aid in isolating the problem should it reoccur.

If the problem you are encountering seems inconsistent, try to determine what the necessary pattern of actions is that will cause it to occur. Genuine bugs in application software like the MTP II Console are almost always consistent in their manifestation: the same set of actions under the same conditions invariably brings about the same results. Determining the exact cause of a bug often requires experiments which replicate the problem situation with one factor changed: starting the program from a different disk drive, restarting the Macintosh with a system folder containing different versions of the System File and the Finder, restarting each MIDI Time Piece in the network, etc.

Customer Support

We are happy to provide customer support to our registered users. If you haven't already done so, please take a moment to complete the registration card in the front of the manual and send it in to us. When we receive your card, you'll be placed on our mailing list for free software updates and other information.

Replacing Disks

If your MTP II Console disk becomes damaged and fails to provide you with fresh copies of the DA, our Customer Support Department will be glad to replace it.

Technical Support

Registered users who are unable, with their dealer's help, to solve problems they encounter with the MTP may call our technical support line. The number is (617) 576-3066, and is staffed Monday through Friday 9 AM to 6 PM, Eastern Time. If you decide to call, please have your MIDI Time Piece manual at hand, and be prepared to provide the following information to help us solve your problem as quickly as possible:

- The serial number of the MIDI Time Piece. This is printed on a sticker placed on the bottom of the MIDI Time Piece. You must be able to supply this number to receive technical support.
- The version of MTP II Console you are working with. This is displayed in the About MTP II Console command in the Apple menu.
- A brief explanation of the problem, including the exact sequence of actions which cause it, and the contents of any error messages which appear on the screen. It is often very helpful to have brief written notes to refer to.
- The pages in the manual which refer to the parts of the MIDI Time Piece network or MTP DA which you are having trouble with.
- The version or creation date of the system software you are using to run the Macintosh. This can be found by choosing About the Finder from the Apple menu.

We're not able to solve every problem immediately, but a quick call to us may yield a suggestion for a problem which you might otherwise spend hours trying to track down.

Our technical support telephone line is dedicated to helping registered users solve their problems quickly. In the past, many people have also taken the time to write to us with their comments, criticism and suggestions for improved versions of our products. We thank them; many of those ideas have been addressed in our development efforts. If you have features or ideas you would like to see implemented, we'd like to hear from you. Please write to the MIDI Time Piece Development Team, Mark of the Unicorn Inc., 222 Third Street, Cambridge, MA 02142.

Although we do not announce release dates and features of new products or versions of our software in advance, we will notify all registered users immediately by mail as soon as new releases become available. If you move from the address indicated on your registration card, please send us a note with your change of address so that we can keep you informed of future upgrades and releases.

Appendix D ***SMPTE Synchronization Basics***

What is synchronization?

This chapter explains what SMPTE synchronization is, how it works, and how to synchronize using the MIDI Time Piece II.

Synchronization is the occurrence of two or more events at exactly the same point in time. In regard to SMPTE and MIDI, it is the process of making MIDI devices, such as a MIDI sequencer, precisely follow an audio tape as it plays back. When the tape plays, the sequencer plays right along with it. When the tape fast forwards to a new location and begins to play, the sequencer will jump ahead to precisely the same location and begin playing, too. Synchronization allows you to freely move about in a piece of music without ever losing the “lockup” between the tape and the sequencer.

Without synchronization, devices with independent time bases, no matter how precisely they keep time, will inevitably drift apart from one another over time.

What is SMPTE?

The word *SMPTE* is an acronym for the Society of Motion Picture and Television Engineers. In the mid 1970's, the society established a timing standard, called *SMPTE time code*, that is now an international standard. SMPTE time code, commonly referred to as just “SMPTE”, was developed for film and video work but has proven to be very useful in normal audio work as well. It is an absolute time code, expressing hours, minutes, seconds and divisions of a second in digital form.

Because of its accuracy and wide-spread acceptance, SMPTE is the most powerful of the time code formats that are used in audio production.

Two forms of SMPTE: LTC versus VITC

SMPTE time code consists of a series of binary impulses that are recorded onto each frame on film or video tape, or continuously on audio tape. These binary impulses count each frame, expressing its location in hours, minutes, seconds, and frames.

What is LTC?

What is VITC?

The benefits of VITC over LTC

SMPTE has two forms:

1. an audio signal, called *Longitudinal Time Code* (LTC), or
2. a video signal recorded in the vertical blanking segment of video frames, called *Vertical Interval Time Code* (VITC)

Longitudinal Time Code (LTC) is the audio form of SMPTE Time Code. LTC consists of an audio signal that oscillates between two frequencies (approximately 2 and 4 kHz) to form an 80-bit word of 1's and 0's for each frame on the tape. The 80 bits in each SMPTE frame describe, in binary form (1's and 0's), the location of that frame in hours, minutes, seconds, and frames.

Vertical Interval Time Code (VITC, pronounced "Vit-see") is SMPTE time code that is encoded in the video signal in the vertical blanking segment at the top edge of each frame. A video signal consists of 525 scan lines, which the rotating heads of a VTR scan as the tape rolls past them. The first couple dozen of the scan lines at the edge of each frame are blank; they do not contain any part of the video picture. VITC is recorded on several of these blank scan lines.

You can actually see VITC in the vertical blanking segment portion of a video picture by adjusting the vertical hold on a video screen. The 90-bit binary VITC signal appears as a series of white dots in the black strip between the top and bottom of the picture.

VITC is part of the video signal; it does not have its own "track" on the video tape. It is therefore not possible to stripe VITC by itself onto video tape. VITC can only be recorded at the same time as the video picture.

Of the two forms of SMPTE time code, LTC has become much more widely used as a synchronization standard in the audio production industry because VITC synchronizers in the past have been extremely expensive. So, the term *SMPTE* or *SMPTE time code* has become a common expression for *LTC* in recording studios, post-production houses, MIDI hardware and software manuals, and so on.

Recently, Mark of the Unicorn introduced the Video Time Piece, an affordable VITC synchronizer and video character generator. It is both an LTC *and* VITC synchronizer, so the distinction between LTC

and VITC becomes important. So, if you are used to saying “SMPTE”, ask yourself “What type of SMPTE? LTC or VITC?” This will help prevent confusion as you work with the Video Time Piece.

The primary advantage that VITC has over LTC is that synchronization can be achieved at very slow tape speeds—even when shuttling the video tape backwards or forwards one frame at a time. VITC allows for this because it is part of the video signal, which is continuously scanned by the VTR’s rotating heads even when the tape is stopped. LTC cannot be read at slow tape speeds because it is an audio signal in one of the audio tracks, which can only be read when the tape is moving at a constant speed.

Another benefit of VITC is that it does not eat up any audio tracks.

Since VITC only works with video, you must use LTC for synchronizing a multi-track tape deck. But don’t fret: LTC is affordable and more than adequate for tape synchronization.

If you compose music for film or video, you too can use LTC. We strongly recommend, however, that you consider VITC because of the benefits noted above. Contact Mark of the Unicorn for more information about the Video Time Piece.

In either form (LTC or VITC), SMPTE time code has four different formats for counting frames per second (fps): 24 fps, 25 fps, 30 fps, and Drop Frame. 24 is used mostly with film; 25 is the European format for film; 30 is the US standard for audio and video; Drop Frame is required only with color video programs in which the SMPTE time code numbers must precisely match the actual elapsed time.

Drop Frame SMPTE time code counts frames at a rate of 30 frames per second but skips two frame numbers at the beginning of each minute, except every 10th minute. When the time code display reaches HH:MM:59:29 (59 seconds and 29 frames at the end of each minute), the frame count skips 00 and 01 and jumps ahead to HH:MM:00:02. This jump does not happen at minutes 00, 10, 20, 30, 40, and 50.

Should I use LTC or VITC?

Frame rates

What is drop frame?

Why does drop frame exist?

Thus, frame numbers such as 11:14:00:00 and 11:14:00:01 do not exist in Drop Frame: the display will show a frame at 11:13:59:29 and the next frame at 11:14:00:02. However, frame numbers at each tenth minute will not be skipped, such as from 11:19:59:29 to 11:20:00:00, followed by 11:20:00:01 and 11:20:00:02, etc.

Keep in mind that only numbers are skipped, not actual frames of the picture. In other words, every picture frame gets a frame number and the *numbers* skip every once in a while.

Video was first introduced in a black and white and it ran at exactly 30 frames per second. Years later, color video was developed. The Drop Frame format was developed to compensate for an accumulating timing error in color video, which runs slightly slower than black and white video. Color video frames actually run at a rate of 29.97 frames per second, which is slightly slower than exactly 30 frames per second. Over a period of time, this difference causes the time code that is counting the frames to fall behind actual elapsed time.

For example, let's say our video program is 60 minutes long. When shown in black and white video at exactly 30 frames per second, it will be precisely 60 minutes long. In addition, the time code that counts the frames will show 01:00:00:00 (exactly one hour's worth of frames) on the final frame. So far, so good.

Now, if we play a color version of the same program, it actually *runs slower* at 29.97 frames per second so that the *actual elapsed time* is 60 minutes and 3.6 seconds! Here's where the discrepancy arises: the time code that counts the frames shows that one hour's worth of frames has gone by, which is 01:00:00:00 on the final frame. But this does not match the *actual elapsed time*, which is 01:00:03:18! In broadcast situations, where edits are calculated down to fractions of a second, 3.6 seconds is a long, long time—too large a degree of inaccuracy.

Drop Frame time code fixes this problem by skipping ahead every once in a while as it counts color video frames to catch up with actual elapsed time. The result is that over the period of several minutes, the time code matches the actual elapsed time.

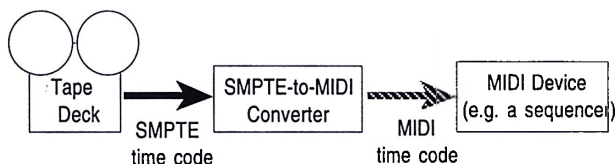
Should I use drop frame?

How does SMPTE synchronization work?

It is important to note that since frames are dropped only once every minute, Drop Frame time code does not *always* reflect the *exact* actual elapsed time: it may be up to a 10th of a second faster or slower than actual elapsed time, depending on how recently the last frame number was dropped.

Use Drop Frame time code only when it is absolutely necessary. Drop Frame is required only with color video projects in which the SMPTE time code numbers must precisely match the actual elapsed time, such as when preparing a television broadcast. Otherwise, we suggest that you use 30 Non-drop time code because of the slight inaccuracy mentioned above, as well as the confusion that drop frame can cause.

The syncing process is straightforward. It involves one device following another. As you play back a tape with SMPTE time code on it, the SMPTE feeds into a hardware device called a *SMPTE-to-MIDI converter*. The converter translates the SMPTE audio signal into MIDI sync and sends the MIDI sync to a MIDI device such as a sequencer. The MIDI device receives the time code and adjusts its playback position to match the time code. All of this happens very quickly, around 30 times per second, which is fast enough so that the MIDI device follows the tape smoothly.



Certain phrases are often used to describe synchronization. The tape deck to which the MIDI device is synchronized is called the synchronization *master*; the MIDI device, which follows, is called the *slave*. The MIDI device is *slaved to the master*. The converter, which reads the time code on tape, is *locked to tape*, or when using SMPTE time code, *locked to SMPTE*.

How does the MTP II work?

The MIDI Time Piece II is a SMPTE-to-MIDI converter. When it receives SMPTE time code, it converts that signal into MIDI sync, which is then sent to MIDI devices connected to the network. These devices, in turn, slave to the MIDI sync.

What is MIDI sync?

MIDI Sync is time code in the form of MIDI data that matches the format of SMPTE time code: time is expressed in hours, minutes, seconds, and frames. The MIDI Time Piece can send MIDI sync over MIDI to a sequencer, which follows the MIDI sync.

The MIDI Time Piece supports two types of MIDI sync: one is called *MIDI Time Code* (MTC) and the other is called *Enhanced Direct Time Lock* (DTLe).

DTLe and MTC work a little differently but achieve the same result. Both consist of short system exclusive messages, called a *full frame message* or *tape position message*, that precisely describe a frame location in hours, minutes, seconds, and frames. MTC sends a full frame message every frame. DTLe sends a tape position message once every second or so, and sends shorter *frame advance* messages in between.

The MIDI Time Piece can convert SMPTE to either MTC or DTLe. Most MIDI devices and software use MTC. Some, such as Performer (Version 3.4 or higher), take advantage of DTLe, which accomplishes the same task as MTC but with higher efficiency.

Locking the MTP to SMPTE

In order to sync your MIDI device to tape, you must first successfully lock the MIDI Time Piece to the SMPTE on the tape. To do so, you need to:

1. Stripe a tape with SMPTE
2. Connect the MIDI Time Piece to the tape deck
3. Prepare the MIDI Time Piece to convert SMPTE
4. Roll the tape to see if successful SMPTE lockup has been achieved

These steps are discussed in chapter 7, "Working with SMPTE". Once lockup has been achieved, you can stop the tape, set up your MIDI hardware or software, and then slave it to the MIDI Time Piece II.

Chapter E *Enhanced Direct Time Lock*

Overview

This appendix provides a general description of Direct Time Lock and a detailed technical specification.

Enhanced Direct Time Lock (DTLe) is a synchronization standard which allows computer software like Performer or other MIDI devices to easily lock to SMPTE time code through any converter that supports this standard, such as the MIDI Time Piece II.

Direct Time Lock (DTL) consists of tape position messages, which are short sysex messages, and frame advances, which are MIDI real-time F8 bytes as defined by the MIDI specification. When a SMPTE-to-MIDI converter first receives SMPTE, it sends a single tape position message to establish the location at which SMPTE started. Then, it sends one frame advance every time it receives another SMPTE frame.

The MIDI Time Piece II's Enhanced Direct Time Lock (DTLe) is an improved form of DTL, which was introduced several years ago. Instead of sending one frame advance per SMPTE frame, DTLe sends *four* frame advances per frame. In addition, the tape position message has been expanded to include the frame rate of the SMPTE and an identification of which device in the network is sending the DTLe.

To fully support DTLe, the MIDI Time Piece II sends a tape position message approximately once every second in addition to the continuous stream of frame advance messages. This prevents even the slightest amount of drift due to small drop-outs or other inconsistencies in the SMPTE time code. When used with programs such as Performer (Version 3.4 or higher) that support DTLe, the MIDI Time Piece provides the most reliable SMPTE-to-MIDI lockup available.

Technical specification

What follows is a detailed technical specification of the Direct Time Lock standard and its implementation in the MIDI Time Piece II and Performer. This specification is a revision of the original Direct Time Lock specification released in June, 1987.

There are two messages associated with direct time lock: *full frame* and *frame advance*. The *full frame message* should be sent when the time code source (such as a tape machine) is started and the converter first achieves lock, followed by a full frame message once per second while the converter maintains lock. The message is implemented as a system exclusive message. The data specifies the full frame in hours, minutes, seconds, frames.

<full frame> ::=

<F0H>	<00H>	<33H>	(Manufacturer's ID)
		<7FH>	(Universal real time message)
		<0CH>	(DTL full frame message ID)
		<0nH>	(MTP network specifier) n = 0 specifies Box 1-8 n = 8 specifies Box 9-16
		<0ffhhhhhB>	(ff specifies SMPTE timecode frame rate, and hhhh specifies the hour from 0 to 23.) ff = 00 specifies 24 fps ff = 01 specifies 25 fps ff = 10 specifies 30 drop ff = 11 specifies 30 non-drop
		<mmH>	(Specifies minutes from 0 to 59)
		<ssH>	((Specifies seconds from 0 to 59)

<ffH>	(Specifies frames from 0 to 29)
<F7H>	(End of message)

The full frame message is a starting reference for the frame advance messages; it need not be sent in synchronization with anything. A converter may wish to send the message a few frames before the specified frame is reached.

The frame advance message is sent four times each frame. The first frame advance sent after a full frame message corresponds to the beginning of the frame specified in the full frame message. Successive frame advances correspond to successive frames.

<frame advance> ::= <F8H>

The frame advance message is the same as the standard MIDI clock message used in normal MIDI sync. This message is a real time message as defined by MIDI, and may be inserted in the middle of a normal MIDI message for minimum timing delay.

While the tape is running, the converter should send a tape position message once per second. These messages should be sent between frame advances. As with the initial full frame message, the frame advance following the full frame message corresponds to the beginning of the frame specified in the full frame message.

Sending periodic full frame messages allows slave devices to come on line at any time and sync up to the master. Periodic full frame messages also ensure that any slippage due to data loss over the MIDI line is corrected.

Performer's Direct Time Lock implementation

If Direct lock mode and Slave to External Sync are selected and the Play button is grey, Performer waits for a full frame message. When one is received, the sequence is rewound to that point and playback is readied. When frame advances are received, Performer advances in sync with the frame messages, playing the sequence. This continues until one of two things happens.

If more than 8 frames of time pass without a frame advance message, Performer assumes playback has been stopped. The sequence is stopped (notes are turned off), and Performer begins looking for a full frame message again.

When another full frame message is received, Performer compares the position in the message to the current playback position. If they are the same, Performer does nothing. Otherwise, Performer makes whatever adjustment is needed. If the full frame message is not close to the current location, Performer immediately stops playback and rewinds to the new location. Playback is then readied at the new location, and frame advances are looked for.

If you are designing a converter, you should be aware of the automatic time out. If your converter has the capability to sync to slow tape motions (tape rocking), it should send full frame messages only without frame advances when doing so. It is also not recommended that you send frame advances at high speed when the tape is cueing rapidly. It's better to stop sending frame advances, and then send a new full frame command when the tape returns to normal playback speed.

If the tape is being rewound, the converter should stop sending messages and wait until the tape is moved forward again. At that point the first full frame message should be sent.

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